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Annotated Checklist of the Marine and Estuarine Fishes of Germany, with Remarks of their Taxonomic Identity

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With 1 table

Summary

An annotated checklist of the marine and estuarine fishes of Germany is presented, including 208 species. The German marine fish fauna has cold temperate, warm temperate, and offshore elements, some long-range migrating species, and a large brackish water element including anadromous and catadromous migrators.

The nomenclatural history of German marine and estuarine fish species is discussed. Most of the species have been originally described in the 18th or 19th century, often with numerous literature sources (16th–18th century) and a composite nature, with the sources based on several species. While the taxonomic identity of 86 species has already been fixed by existing holo-, syn-, lecto- or neotypes, the nomenclatural usage of 81 further species names is fixed in the present paper by designations on the basis of the ICZN rules. **Lectotypes** are designated for **9 species; neotypes** are designated for **72 species**. For 2 species, ICZN decisions are pending.

Zusammenfassung

Die vorliegende Arbeit enthält eine Liste der marinen und ästuarinen Fische Deutschlands (208 Arten). Die Deutsche Meeresfischfauna umfaßt kalt gemäßigte, warm gemäßigte und Hochsee-Elemente, sowie einige weiträumig wandernde Arten und einen umfangreichen Brackwasseranteil mit anadrom und katadrom wandernden Arten.

Die nomenklatorische Geschichte der deutschen Meeresfischarten wird diskutiert. Die meisten Arten wurden im 18. oder 19. Jahrhundert erstbeschrieben, beruhen oft auf zahlreichen früheren Literaturquellen aus dem 16.–18. Jahrhundert und haben vielfach einen aus mehreren gültigen Arten zusammengesetzten Ursprung. Während die taxonomische Identität von 86 Arten durch bereits existierende Holotypen, Syn-, Lekto- oder Neotypen fixiert war, wird der nomenklatorische Gebrauch von weiteren 81 Artnamen in der vorliegenden Veröffentlichung durch Designation von Lekto- oder Neotypen auf der Grundlage der Internationalen Nomenklaturregeln festgelegt. Für **9 Arten** werden **Lektotypen** vorgeschlagen, für **72 Arten Neotypen.** Für die Identität zweier Arten wurden Entscheidungen der Internationalen Nomenklaturkommission beantragt, die aber noch ausstehen.

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1. Introduction

The marine and estuarine fishes of Germany have been under scientific examination since the Middle Ages. One of the first printed books dealing with fishes of the area was Gesner (1563), who published in German language. Linnaeus (1758) described many species, constantly binominal, forming the starting point of modern ichthyological nomenclature. Many of the descriptions of Linnaeus, however, were based on Artedi in Linnaeus (1738) or Linnaeus (1746), and these monographs were merely compilations of historical sources, so that if the identity of the species described Linnaeus (1758) is in question one has to go back to the early sources, including Rondeletius (1554, 1555), Rajus (1713), etc.

The European marine fishes were treated by Hureau & Monod (1973, checklist), and by Whitehead et alii (1986). Fricke (1987) published keys and short descriptions of the marine fishes of Germany, excluding estuarine species. European freshwater species were treated by Kottelat (1997, checklist). Brunken & Fricke (1987) published keys and short descriptions of German freshwater fishes, many of which are brackish water tolerant, penetrating into estuaries.

Preliminary lists of species in the area were given in the Red Lists of the German marine fishes published since 1994 (Fricke, Berghahn, Rechlin, Neudecker, Winkler, Bast & Hahlbeck, 1994; Fricke, Berghahn & Neudecker, 1995, North Sea excluding estuarines; Berg, Krog, Muus, Nielsen, Fricke, Berghahn, Neudecker & Wolff, 1996, Wadden Sea areas of the Netherlands, Germany and Denmark; Fricke, Rechlin, Winkler, Bast & Hahlbeck, 1996, Baltic Sea including estuaries).

The scope of the present paper is to give a complete, actual list of the marine and estuarine fish species living in German waters, and to clarify and stabilize specific identities and nomenclature.

2. Methods and materials

2.1. Methods

The study area includes the whole German influence area in the North Sea, and the German economic zone in the Baltic Sea, as defined by FRICKE, BERGHAHN, RECHLIN, NEUDECKER, WINKLER, BAST & HAHLBECK (1994: 157–158, fig. 1); it also includes the estuaries of the major rivers Ems, Weser, Oste, Elbe, Eider, Schlei, Trave, Warnow, Recknitz, Peene, and Oder (areas influenced by the tides/brackish water).

In the checklist, the family, genus, species, subspecies (if applicable), author, year of original publication, type status, primary types, and designator (if applicable) are given. In some cases, if a published illustration has been designated as the lectotype of a species, reference to that illustration is given.

In the taxonomic section, several species with an original description of a composite nature, uncertainty in the identification of the original description or lacking types are discussed. Here, the family, actual species name, original reference, reference to original illustrations, and the original description (if necessary) are given, and discussed according to their taxonomical relevance and identity. In several cases, lectotypes or neotypes are established following the rules of ICZN. The taxonomic arrangement of the families follows NELSON (1984).

The following measurements of type specimens are taken:

SL standard length (tip of snout to mid-base of hypural plate);
TL total length (tip of snout to end of caudal fin).

2.2. Materials

Type specimens of German marine and estuarine fish species are deposited in the following institutions (acronyms following LEVITON et alii, 1985):

ANSP The Academy of Natural Sciences of Philadelphia, U.S.A.;
BMNH Natural History Museum, London, England, Great Britain [formerly British Museum (Natural History)];
LSL Linnean Society, London, England, Great Britain;
MHNG Muséum d'Histoire Naturelle, Genève, Switzerland;
MNHN Muséum National d'Histoire Naturelle, Paris, France;
NMW Naturhistorisches Museum, Wien, Austria;
NRM Naturhistoriska Riksmuseet, Stockholm, Sweden;
RMNH Nationaal Naturhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands;
SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany;
ZMB Zoologisches Museum, Museum für Naturkunde der Humboldt-Unviersität, Berlin, Germany;
ZMUC Zoologisk Museum, Koebenhavns Universitet, Copenhagen, Denmark;
ZMUO Universitets i Oslo, Zoologisk Museum, Oslo, Norway;
ZMUU Uppsala Universitet, Zoologiska Museet, Uppsala, Sweden;
ZSL Zoological Society of London, England, Great Britain.

3. Checklist of the marine and estuarine fishes of Germany

A checklist of all species recorded from German marine and estuarine waters is given in Tab. 1. A total of 208 species is known to occur in Germany. The fish fauna is impoverished, due to effects of glacial periods during the Pleistocene. The most speciose families (number of species in parentheses) are the Gadidae (18), Cyprinidae (16), Gobiidae (13), Rajidae (10), Labridae (7), and Pleuronectidae (7).

The German marine fish fauna has a strong **cold temperate** element, which is mainly represented by the Gadidae, Rajidae, Pleuronectidae, Cottidae, Stichaeidae and Pholidae. Cold temperate fishes are among the most common species in this area. A **warm temperate** element is found due to the influence of the Gulf Stream

(families Gobiidae, Labridae, Sparidae, Callionymidae, Serranidae, Atherinidae, Blenniidae, Carangidae and Lophiidae). Also, species living **offshore** are occasionally migrating with the currents into the North Sea (Scombridae, Bramidae). Several temperate coastal species are **long-range migrators** and spend an important period of their life in the German North Sea, either for feeding or for reproduction *(Scomber scombrus; Clupea harengus).* Finally, as the German marine waters have a relatively low salinity, with a large percentage of brackish areas (especially in the Baltic Sea and in the mouths of the large rivers Rhine, Ems, Weser and Elbe), there is a considerable **brackish water** element (Cyprinidae, Percidae, Osmeridae), with several species **anadromously** or **catadromously migrating** between marine and brackish waters (Petromyzontidae, Salmonidae, Clupeidae/*Alosa,* Anguillidae, Gasterosteidae, Pleuronectidae/*Platichthys flesus*).

Tab. 1. Checklist of German marine and estuarine fish species and subspecies.

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
001	Myxinidae	*Myxine glutinosa* Linnaeus, 1758	NRM LP. 89 (4)	syntypes
002	Petromyzontidae	*Lampetra fluviatilis* (Linnaeus, 1758)	MHNG 816.18	neotype/ KOTTELAT, 1997: 27
003	Petromyzontidae	*Petromyzon marinus* Linnaeus, 1758	illustration by GESNER, 1604: 590	lectotype/ KOTTELAT, 1997: 29
004	Hexanchidae	*Hexanchus griseus* (Bonnaterre, 1788)	–	
005	Lamnidae	*Lamna nasus* (Bonnaterre, 1788)	–	
006	Cetorhinidae	*Cetorhinus maximus* (Gunnerus, 1765)	illustration by GUNNERUS, 1765: pl. 2	**lectotype/** see p. 15
007	Scyliorhinidae	*Galeus melastomus* Rafinesque-Schmaltz, 1810	–	
008	Scyliorhinidae	*Scyliorhinus canicula* (Linnaeus, 1758)	**SMNS 8663**	**neotype/** see p. 15
009	Scyliorhinidae	*Scyliorhinus stellaris* (Linnaeus, 1758)	**SMNS 8673**	**neotype/** see p. 16
010	Carcharhinidae	*Galeorhinus galeus* (Linnaeus, 1758)	**SMNS 20661**	**neotype/** see p. 16
011	Carcharhinidae	*Mustelus asterias* Cuvier in Cloquet, 1819	–	
012	Carcharhinidae	*Mustelus mustelus* (Linnaeus, 1758)	**SMNS 20662**	**neotype/** see p. 17
013	Carcharhinidae	*Prionace glauca* (Linnaeus, 1758)	–	

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
014	Squalidae	*Somniosus microcephalus* (Bloch & Schneider, 1801)	–	
015	Squalidae	*Squalus acanthias* Linnaeus, 1758	NRM LP.85 (1) ZMUU LC.160 (1)	syntype syntype
016	Alopiidae	*Alopias vulpinus* (Bonnaterre, 1788)	–	
017	Sphyrnidae	*Sphyrna zygaena* (Linnaeus, 1758)	NRM LP.88 (1)	syntype
018	Squatinidae	*Squatina squatina* (Linnaeus, 1758)	NRM L.87 (1) ZMUU LC.161 (1)	syntype syntype
019	Rajidae	*Raja batis* Linnaeus, 1758	–	
020	Rajidae	*Raja circularis* Couch, 1838	–	
021	Rajidae	*Raja clavata* Linnaeus, 1758	**SMNS 16042**	**neotype/** see p. 17
022	Rajidae	*Raja fullonica* Linnaeus, 1758	–	
023	Rajidae	*Raja fyllae* Lütken, 1887	ZMUC 1	holotype
024	Rajidae	*Raja microcellata* Montagu, 1818	–	
025	Rajidae	*Raja naevus* Müller & Henle, 1841	MNHN 1306 (1) MNHN 1332 (1) RMNH 4237 (1)	syntype syntype syntype?
026	Rajidae	*Raja oxyrinchus* Linnaeus, 1758	–	
027	Rajidae	*Raja radiata* Donovan, 1808	–	
028	Rajidae	*Raja undulata* Lacepède, 1802	–	
029	Torpedinidae	*Torpedo marmorata* Risso, 1810	illustration by Risso, 1810: p. 3, fig. 4	**lectotype/** see p. 17
030	Torpedinidae	*Torpedo nobiliana* Bonaparte, 1835	ANSP 426–430 (14) NMW 76279 (1)	syntypes syntype
031	Dasyatidae	*Dasyatis pastinaca* (Linnaeus, 1758)	**SMNS 12651**	**neotype/** see. p. 18
032	Myliobatidae	*Myliobatis aquila* (Linnaeus, 1758)	–	
033	Chimaeridae	*Chimaera monstrosa* Linnaeus, 1758	**SMNS 543**	**neotype/** see p. 18
034	Acipenseridae	*Acipenser sturio* Linnaeus, 1758	BMNH 1853.11. 12:210 (1) NRM LP.uncat. (1)	syntype syntype

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
035	Anguillidae	*Anguilla anguilla* (Linnaeus, 1758)	**SMNS 17418**	**neotype/** see p. 19
036	Congridae	*Conger conger* (Linnaeus, 1758)	**SMNS 20573**	**neotype/** see p. 19
037	Clupeidae	*Alosa alosa* (Linnaeus, 1758)	BMNH 1853.11. 12:179 (1)	syntype
038	Clupeidae	*Alosa fallax fallax* (Lacepède, 1801)	MNHN 3188	neotype/ WHITEHEAD, 1967: 79
039	Clupeidae	*Clupea harengus* Linnaeus, 1758	BMNH 1853.11. 12:111 (1)	syntype?
040	Clupeidae	*Sardina pilchardus pilchardus* (Walbaum, 1792)	**SMNS 20570**	**neotype/** see p. 20
041	Clupeidae	*Sprattus sprattus* (Linnaeus, 1758)	LSL 46–47 (2)	syntypes?
042	Engraulidae	*Engraulis encrasicolus* (Linnaeus, 1758)	**SMNS 20562**	**neotype/** see p. 20
043	Sternoptychidae	*Maurolicus muelleri* (Gmelin, 1789)	–	
044	Cyprinidae	*Abramis ballerus* (Linnaeus, 1758)	**SMNS 15536**	**neotype/** see p. 21
045	Cyprinidae	*Abramis bjoerkna* (Linnaeus, 1758)	**SMNS 12668**	**neotype/** see p. 21
046	Cyprinidae	*Abramis brama* (Linnaeus, 1758)	BMNH 1853.11. 12:147 (1)	syntype
047	Cyprinidae	*Alburnus alburnus alburnus* (Linnaeus, 1758)	**SMNS 15204**	**neotype/** see p. 22
048	Cyprinidae	*Aspius aspius aspius* (Linnaeus, 1758)	**SMNS 20637**	**neotype/** see p. 22
049	Cyprinidae	*Barbus barbus barbus* (Linnaeus, 1758)	BMNH 1853.11. 12:144 (1)	lectotype/ KOTTELAT, 1997: 47
050	Cyprinidae	*Carassius carassius* (Linnaeus, 1758)	**SMNS 12750**	**neotype/** see p. 23
051	Cyprinidae	*Gobio gobio gobio* (Linnaeus, 1758)	**SMNS 20595**	**neotype/** see p. 24
052	Cyprinidae	*Leuciscus cephalus cephalus* (Linnaeus, 1758)	NRM LP.81 (1) ZMMU LC.213 (1)	syntype syntype
053	Cyprinidae	*Leuciscus idus idus* (Linnaeus, 1758)	**SMNS 17362**	**neotype/** see p. 24
054	Cyprinidae	*Pelecus cultratus* (Linnaeus, 1758)	ZMUU LC.224 (1)	holotype
055	Cyprinidae	*Phoxinus phoxinus phoxinus* (Linnaeus, 1758)	**SMNS 20596**	**neotype/** see p. 25

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
056	Cyprinidae	*Rutilus rutilus rutilus* (Linnaeus, 1758)	LSL 44 (1)	syntype?
057	Cyprinidae	*Scardinius erythrophthalmus* (Linnaeus, 1758)	**SMNS 20597**	**neotype/** see p. 26
058	Cyprinidae	*Tinca tinca* (Linnaeus, 1758)	**SMNS 10985**	**neotype/** see p. 26
059	Cyprinidae	*Vimba vimba* (Linnaeus, 1758)	**SMNS 14430**	**neotype/** see p. 27
060	Cobitidae	*Cobitis taenia* Linnaeus, 1758	ZMUU LC.205 (1)	syntype?
061	Esocidae	*Esox lucius* Linnaeus, 1758	BMNH 1853.11. 12: 114 (1)	syntype?
062	Salmonidae	*Coregonus lavaretus balticus* Thienemann, 1922	**SMNS 20628**	**neotype/** see p. 28
063	Salmonidae	*Coregonus lavaretus oxyrinchus* (Linnaeus, 1758)	BMNH 1853.11. 12: 160 (1)	syntype
064	Salmonidae	*Salmo salar* Linnaeus, 1758	**SMNS 19125**	**neotype/** see p. 28
065	Salmonidae	*Salmo trutta* Linnaeus, 1758	**SMNS 20594**	**neotype/** see p. 29
066	Osmeridae	*Osmerus eperlanus schonfoldi* McAllister in Whitehead et alii, 1986	**SMNS 20598**	**neotype/** see p. 30
067	Carapidae	*Echiodon drummondii* Thompson, 1837	ZMUC uncat.	neotype/ Markle & Olney, 1990: 255
068	Gobiesocidae	*Diplecogaster bimaculata bimaculata* (Bonnaterre, 1788)	–	
069	Lophiidae	*Lophius budegassa* Spinola, 1807	**SMNS 2209**	**neotype/** see p. 30
070	Lophiidae	*Lophius piscatorius* Linnaeus, 1758	NRM 4553 (1)	syntype
071	Gadidae	*Ciliata mustela* (Linnaeus, 1758)	NRM 5625 (1)	syntype
072	Gadidae	*Ciliata septentrionalis* (Collett, 1875)	ZMUO J. 5052 (1)	lectotype/ Collett, 1875: pl. 2
073	Gadidae	*Enchelyopus cimbrius* (Linné, 1766)	**SMNS 2647**	**neotype/** see p. 30
074	Gadidae	*Gadus morhua callarias* Linnaeus, 1758	BMNH 1853.11. 12:162 (1) LSL 36 (1)	syntype syntype?

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
075	Gadidae	*Gadus morhua morhua* Linnaeus, 1758	**SMNS 20563**	**neotype/** see p. 31
076	Gadidae	*Gaidropsarus mediterraneus* (Linnaeus, 1758)	NRM 5631 (1)	syntype
077	Gadidae	*Gaidropsaris vulgaris* (Cloquet, 1824)	illustration by Rajus, 1713 pl. 2, fig. 9	lectotype/ see p. 31
078	Gadidae	*Lota lota* (Linnaeus, 1758)	LSL 37–38 (2)	syntypes?
079	Gadidae	*Melanogrammus aeglefinus* (Linnaeus, 1758)	BMNH 1853.11. 12:164 (1)	syntype
080	Gadidae	*Merlangius merlangus* (Linnaeus, 1758)	BMNH 1853.11. 12:165–166 (2)	syntypes
081	Gadidae	*Micromesistius poutassou* (Risso, 1827)	–	
082	Gadidae	*Molva molva* (Linnaeus, 1758)	**SMNS 20391**	**neotype/** see p. 32
083	Gadidae	*Phycis blennoides* (Brünnich, 1768)	–	
084	Gadidae	*Pollachius pollachius* (Linnaeus, 1758)	**SMNS 20392**	**neotype/** see p. 32
085	Gadidae	*Pollachius virens* (Linnaeus, 1758)	BMNH 1853.11. 12:167 (1)	syntype
086	Gadidae	*Raniceps raninus* (Linnaeus, 1758)	ZMUU LC.181 (1)	syntype?
087	Gadidae	*Trisopterus esmarki* (Nilsson, 1855)	**SMNS 20397**	**neotype/** see p. 33
088	Gadidae	*Trisopterus luscus* (Linnaeus, 1758)	NRM 5678 (1)	syntype
089	Gadidae	*Trisopterus minutus* (Linnaeus, 1758)	**SMNS 9886**	**neotype/** see p. 34
090	Merlucciidae	*Merluccius merluccius* (Linnaeus, 1758)	**SMNS 20575**	**neotype/** see p. 34
091	Exocoetidae	*Cheilopogon heterurus* (Rafinesque-Schmaltz,1810)	**SMNS 16404**	**neotype/** see p. 35
092	Belonidae	*Belone belone belone* (Linnaeus, 1761)	**SMNS 20453**	**neotype/** see p. 35
093	Scomberesocidae	*Scomberesox saurus* (Walbaum, 1792)	**SMNS 464**	**neotype/** see p. 36
094	Atherinidae	*Atherina boyeri* Risso, 1810	MNHN A.4342 (2) MNHN B.860 (1)	syntypes syntype
095	Atherinidae	*Atherina presbyter* Cuvier, 1829	MNHN A.4337	lectotype/ Blanc & Hureau, 1971: 710

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
096	Zeidae	*Zeus faber* Linnaeus, 1758	LSL 6 (1) NRM 4212 (1)	syntype syntype?
097	Caproidae	*Capros aper* (Linnaeus, 1758)	**SMNS 2204**	**neotype/** see p. 36
098	Gasterosteidae	*Gasterosteus aculeatus* Linnaeus, 1758	ZSL 29 (1) ZSL 30–31 (2)	syntype syntypes
099	Gasterosteidae	*Pungitius pungitius* (Linnaeus, 1758)	LSL 34–35 (2)	syntypes
100	Gasterosteidae	*Spinachia spinachia* (Linnaeus, 1758)	NRM LP.46 (1)	syntype?
101	Macrorhamphosidae	*Macrorhamphosus scolopax* (Linnaeus, 1758)	**SMNS 12661**	**neotype/** see p. 37
102	Syngnathidae	*Entelurus aequoreus* (Linnaeus, 1758)	**SMNS 11563**	**neotype/** see p. 37
103	Syngnathidae	*Nerophis lumbriciformis* (Jenyns, 1835)	ZMUC uncat.	holotype
104	Syngnathidae	*Nerophis ophidion* (Linnaeus, 1758)	BMNH 1853.11. 12:185 (1)	syntype
105	Syngnathidae	*Syngnathus acus* Linnaeus, 1758	BMNH 1853.11. 12:184 (1)	syntype
106	Syngnathidae	*Syngnathus rostellatus* Nilsson, 1858	ZMB 4915 (2)	syntypes
107	Syngnathidae	*Syngnathus typhle* Linnaeus, 1758	LSL 49 (1)	syntype
108	Triglidae	*Aspitrigla cuculus* (Linnaeus, 1758)	NRM LP.27 (1)	syntype
109	Triglidae	*Eutrigla gurnardus* (Linnaeus, 1758)	BMNH 1853.11. 12:15 (1) LSL 18 (1)	syntype syntype
110	Triglidae	*Trigla lucerna* Linnaeus, 1758	BMNH 1853.11. 12:16 (1)	syntype
111	Triglidae	*Trigloporus lastoviza* (Bonnaterre, 1788)	**SMNS 729**	**neotype/** see p. 38
112	Cottidae	*Cottus gobio* Linnaeus, 1758	**SMNS 20600**	**neotype/** see. p. 38
113	Cottidae	*Myoxocephalus quadricornis* (Linnaeus, 1758)	NRM 2491–2492 (2)	syntypes
114	Cottidae	*Myoxocephalus scorpius scorpius* (Linnaeus, 1758)	BMNH 1853.11. 12:17 (1) LSL 17 (1) NRM 2357–2358 (2)	syntype syntype syntypes?
115	Cottidae	*Taurulus bubalis* (Euphrasen, 1786)	–	

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
116	Cottidae	*Triglops murrayi* Günther, 1888	BMNH 1889.6.28:5	lectotype/ PIETSCH, 1994: 368
117	Agonidae	*Agonus cataphractus* (Linnaeus, 1758)	NRM 2808 (1) NRM 2809–2810 (2)	syntype syntypes?
118	Cyclopteridae	*Cyclopterus lumpus* Linnaeus, 1758	BMNH 1853.11 12:183 (1) LSL 25 (1) NRM 4502–07 (7)	syntype syntype syntypes
119	Liparidae	*Liparis liparis* (Linné, 1766)	BMNH 1853.11. 12:182 (1) LSL 26–27 (2)	syntype? syntypes?
120	Liparidae	*Liparis montagui* (Donovan, 1804)	–	
121	Lampridae	*Lampris guttatus* (Brünnich, 1788)	–	
122	Regalecidae	*Regalecus glesne* Ascanius, 1772	illustration by ASCANIUS, 1772: pl. 11	**lectotype/** see p. 39
123	Serranidae	*Dicentrarchus labrax* (Linnaeus, 1758)	BMNH 1853.11. 12:1 (1)	syntype
124	Serranidae	*Polyprion americanus* (Bloch & Schneider, 1801)	–	
125	Serranidae	*Serranus cabrilla* (Linnaeus, 1758)	**SMNS 15283**	**neotype/** see p. 39
126	Percidae	*Gymnocephalus cernuus* (Linnaeus, 1758)	BMNH 1853.11. 12:5 (1) LSL 2 (1)	syntype syntype
127	Percidae	*Perca fluviatilis* Linnaeus, 1758	BMNH 1853.11. 12:3 (1) LSL 1 (1)	syntype syntype
128	Percidae	*Stizostedion lucioperca* (Linnaeus, 1758)	**SMNS 20603**	**neotype/** see p. 40
129	Carangidae	*Trachurus trachurus* (Linnaeus, 1758)	NRM LP.14 (3) NRM LP.14a (1) ZMUU LC.104 (1)	syntypes? syntype? syntype
130	Carangidae	*Trachinotus ovatus* (Linnaeus, 1758)	ZMUU LC.102 (1)	holotype
131	Coryphaenidae	*Coryphaena equiselis* Linnaeus, 1758	–	
132	Bramidae	*Brama brama* (Bonnaterre, 1788)	–	
133	Bramidae	*Pterycombus brama* Fries, 1837	–	
134	Bramidae	*Taractes asper* Lowe, 1843	–	

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
135	Bramidae	*Taractichthys longipinnis* (Lowe, 1843)	–	
136	Sparidae	*Boops boops* (Linnaeus, 1758)	**SMNS 11188**	**neotype/** see p. 40
137	Sparidae	*Dentex maroccanus* Valenciennes in Cuvier & Valenciennes, 1830	ZMB 8597	holotype
138	Sparidae	*Pagellus acarne* (Risso, 1827)	**SMNS 21186**	**neotype/** see p. 40
139	Sparidae	*Pagellus bogaraveo* (Brünnich, 1768)	–	
140	Sparidae	*Pasgellus erythrinus* (Linnaeus, 1758)	**SMNS 979**	**neotype/** see p. 41
141	Sparidae	*Spondyliosoma cantharus* (Linnaeus, 1758)	**SMNS 20564**	**neotype/** see p. 41
142	Sciaenidae	*Argyrosomus regius* (Asso, 1801)	MNHN 7511	neotype/ Trewavas, 1966: 4
143	Mullidae	*Mullus barbatus* Linnaeus, 1758	BMNH 1853.11. 12:14 (1) LSL 3 (1)	syntype syntype?
144	Mullidae	*Mullus surmuletus* Linnaeus, 1758	**SMNS 12479**	**neotype/** see p. 42
145	Mugilidae	*Chelon labrosus* (Risso, 1827)	**SMNS 2208**	**neotype/** see p. 42
146	Mugilidae	*Liza aurata* (Risso, 1810)	**SMNS 20576**	**neotype/** see p. 42
147	Mugilidae	*Liza ramado* (Risso, 1810)	**SMNS 259**	**neotype/** see p. 43
148	Labridae	*Acantholabrus palloni* (Risso, 1810)	**SMNS 11788**	**neotype/** see p. 43
149	Labridae	*Centrolabrus exoletus* (Linnaeus, 1758)	**SMNS 3081**	**neotype/** see p. 44
150	Labridae	*Ctenolabrus rupestris* (Linnaeus, 1758)	NRM LP.1	holotype
151	Labridae	*Labrus bergylta* Ascanius, 1767	illustration by Ascanius, 1767: pl. 1	**lectotype/** see p. 44
152	Labridae	*Labrus bimaculatus* Linnaeus, 1758	–	ICZN case 2905 pending/ Fricke & Ferraris, 1996
153	Labridae	*Symphodus bailloni* (Valenciennes in Cuvier & Valenciennes, 1839)	MNHN A. 7312	lectotype/ Eschmeyer, 1998: 186

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
154	Labridae	*Symphodus melops* (Linnaeus, 1758)	NRM LP.6	holotype
155	Trachinidae	*Echiichthys vipera* (Cuvier, 1829)	**SMNS 12051**	**neotype/** see p. 45
156	Trachinidae	*Trachinus draco* Linnaeus, 1758	BMNH 1853.11. 12:7 (1) LSL 7 (1) LSL 9–10 (2) MNHN A.3150 (4)	syntype syntype syntypes syntypes
157	Zoarcidae	*Zoarces viviparus* (Linnaeus, 1758)	BMNH 1853.11. 12:122 (1) LSL 28 (1)	syntype? syntype?
158	Blenniidae	*Lipophrys pholis* (Linnaeus, 1758)	**SMNS 13033**	**neotype/** see p. 45
159	Blenniidae	*Parablennius gattorugine* (Linnaeus, 1758)	NRM 4601 (1)	syntype
160	Stichaeidae	*Chirolophis ascanii* (Walbaum, 1792)	**SMNS 3079**	**neotype/** see p. 46
161	Stichaeidae	*Lumpenus lumpretaeformis* (Walbaum, 1792)	–	
162	Pholidae	*Pholis gunnellus* (Linnaeus, 1758)	NRM LP.37 (1)	syntype
163	Anarhichadidae	*Anarhichas denticulatus* Krøyer, 1845	–	
164	Ammodytidae	*Ammodytes marinus* Raitt, 1934	**SMNS 15751**	**neotype/** see p. 46
165	Ammodytidae	*Ammodytus tobianus* Linnaeus, 1758	LSL 41 (1) NRM 5716 (1)	syntype syntype?
166	Ammodytidae	*Gymnammodytes semisquamatus* (Jourdain, 1879)	illustration by Jourdan, 1879: pl. 2, figs 8, 13, 16, 18	**lectotype/** see p. 46
167	Ammodytidae	*Hyperoplus lanceolatus* (Sauvage, 1824)	MNHN B.1266 (3)	syntypes
168	Callionymidae	*Callionymus lyra* Linnaeus, 1758	BMNH 1853.11. 12:11 (1) NRM LP. 34 (2)	syntype syntypes
169	Callionymidae	*Callionymus maculatus* Rafinesque-Schmaltz, 1810	**SMNS 21188**	**neotypes/** see p. 47
170	Callionymidae	*Callionymus reticulatus* Valenciennes in Cuvier & Valenciennes, 1837	MNHN A.1528	holotype
171	Gobiidae	*Aphia minuta* (Risso, 1810)	–	

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
172	Gobiidae	*Buenia jeffreysi* (Günther, 1867)	BMNH 1867.8.24: 3–5 (2)	syntypes
173	Gobiidae	*Crystallogobius linearis* (Düben, 1845)	**SMNS 9220**	**neotype/** see p. 47
174	Gobiidae	*Gobius niger* Linnaeus, 1758	NRM LP. uncat. (1) ZMUU LC. 184 (1)	syntype syntype
175	Gobiidae	*Gobiusculus flavescens* (Fabricius, 1779)	**SMNS 21189**	**neotype/** see p. 48
176	Gobiidae	*Lebetus guilleti* (Danois, 1913)	–	
177	Gobiidae	*Lesueurigobius friesii* (Malm, 1874)	–	
178	Gobiidae	*Lebetus scorpioides* (Collett, 1874)	ZMUO J.4020–21 (2)	syntypes
179	Gobiidae	*Pomatoschistus lozanoi* (Buen, 1923)	–	
180	Gobiidae	*Pomatoschistus microps* (Krøyer, 1838)	ZMUC 72	holotype
181	Gobiidae	*Pomatoschistus minutus minutus* (Gronovius in Pallas, 1770)	**SMNS 21190**	**neotype/** see p. 48
182	Gobiidae	*Pomatoschistus norvegicus* (Collett, 1904)	ZMUO J.3980	lectotype/ Webb & Miller, 1974: 736
183	Gobiidae	*Pomatoschistus pictus* (Malm, 1865)	BMNH 1873.8. 16:2 (1) ZMB 8426 (1)	syntype syntype
184	Scombridae	*Orcynopsis unicolor* (Geoffroy St-Hilaire, 1817)	–	
185	Scombridae	*Sarda sarda* (Bloch, 1793)	illustration by Bloch, 1793: pl. 334	**lectotype/** see p. 48
186	Scombridae	*Scomber colias* Gmelin, 1789	**SMNS 21191**	neotype/ see p. 49
187	Scombridae	*Scomber scombrus* Linnaeus, 1758	ZMUU LC. 94	lectotype/ Postel in Hureau & Monod, 1973: 465
188	Scombridae	*Thunnus thynnus thynnus* (Linnaeus, 1758)	**SMNS 3251**	**neotype/** see p. 49
189	Xiphiidae	*Xiphias gladius* Linnaeus, 1758	**SMNS 2205**	**neotype/** see p. 50
190	Centrolophidae	*Centrolophus niger* (Gmelin, 1789)	–	

No.	Family	Species	Type(s) Specimen No. in parentheses	Status/ Designation
191	Pleuronectidae	*Glyptocephalus cynoglossus* (Linnaeus, 1758)	BMNH 1853.11. 12:126 (1)	syntype
192	Pleuronectidae	*Hippoglossoides platessoides limandoides* (Bloch, 1787)	illustration by Bloch, 1787: pl. 186	**lectotype/** see p. 50
193	Pleuronectidae	*Hippoglossus hippoglossus* (Linnaeus, 1758)	BMNH 1853.11. 12:127 (1)	syntype
194	Pleuronectidae	*Limanda limanda* (Linnaeus, 1758)	**SMNS 20565**	**neotype/** see p. 50
195	Pleuronectidae	*Microstomus kitt* (Walbaum, 1792)	**SMNS 9646**	**neotype/** see p. 51
196	Pleuronectidae	*Platichthys flesus flesus* (Linnaeus, 1758)	BMNH 1853.11. 12:132–134 (3) NRM LP. 20 (1)	syntypes syntype
197	Pleuronectidae	*Pleuronectes platessa* Linnaeus, 1758	BMNH 1853.11. 12:130–131 (2)	syntypes
198	Scophthalmidae	*Lepidorhombus boscii* (Risso, 1810)	**SMNS 10056**	**neotype/** see p. 52
199	Scophthalmidae	*Lepidorhombus whiffiagonis* (Walbaum, 1792)	illustration by Rajus, 1713: pl. 1, fig. 2	**lectotype/** see p. 53
200	Scophthalmidae	*Phrynorhombus norvegicus* (Günther, 1862)	–	
201	Scophthalmidae	*Psetta maxima* (Linnaeus, 1758)	BMNH 1853.11. 12:135 (1)	syntype
202	Scophthalmidae	*Scophthalmus rhombus* (Linnaeus, 1758)	LSL 43 (1) NRM LP. 21 (1)	syntype? syntype?
203	Scophthalmidae	*Zeugopterus punctatus* (Bloch, 1787)	ZMB 2392 (2) ZMB 7402 (1)	syntypes syntype?
204	Bothidae	*Arnoglossus laterna* (Walbaum, 1792)	**SMNS 20572**	**neotype/** see p. 52
205	Soleidae	*Monochirus luteus* (Risso, 1810)	**SMNS 20602**	**neotype/** see p. 53
206	Soleidae	*Solea solea* (Linnaeus, 1758)	**SMNS 9660**	**neotype/** see p. 54
207	Balistidae	*Balistes capriscus* Gmelin, 1789	**SMNS 2663**	**neotype/** see p. 54
208	Molidae	*Mola mola* (Linnaeus, 1758)	–	

4. Taxonomic remarks

Cetorhinidae

Cetorhinus maximus (Gunnerus, 1765)

Sqvalus maximus Gunnerus, 1765: 33, pl. 2 (Trondheim/Norway; lectotype: Gunnerus, 1765: pl. 2, as designated below).

Gunnerus (1765: 33–49, pl. 2) described and illustrated his *Sqvalus maximus* in detail. The illustration is useful to distinguish the species, except that the gill slits are much too short. No type material could be detected (Eschmeyer, 1998: 1038; own research). In order to stabilize the present usage of the name (in the sense of Quéro in Whitehead et alii, 1984: 89–90; Fricke, 1987: 41), I hereby designate the illustration of Gunnerus (1765: pl. 2) as the **lectotype** of *Sqvalus maximus* Gunnerus, 1765.

Scyliorhinidae

Scyliorhinus canicula (Linnaeus, 1758)

Squalus Canicula Linnaeus, 1758: 234 (in oceano Europae/European sea; neotype: SMNS 8663, as designated below).
Squalus Catulus Linnaeus, 1758: 235 (in oceano Europae/European sea; neotype: SMNS 8663, as designated below).

Linnaeus (1758: 234) described his *Squalus canicula* as follows:
"S. rufo-varius, pinna ani medio inter anum caudamque pinnatum. ... *Habitat in Oceano* Europae."
He also refered to descriptions from Rondeletius (1554) to Willughby (1686) and Artedi in Linnaeus (1738) as literature sources. On page 235, Linnaeus (1758) described his *Squalus catulus* as follows:
"S. dorso variegato mutico, pinnis ventralibus concretis, dorsalibus caudae approximatis."

In addition to this description, Linnaeus (1758) refered to descriptions by Artedi in Linnaeus (1738), Gronovius (1754a), Salviani (1554), Willughby (1686), and Rajus (1713). Rondeletius (1554: 380–383, figs, "De Canicula Aristotelis"), Gesner (1563: LXXX, figs, as *Canicula secunda species siue Aristotelis*), and Rajus (1713: 22, *Catulus major vulgaris,* from Cornwall) inadequately described and illustrated a scyliorhinid with small spots which may be referable to this species. Both nominal species described by Linnaeus are probably of a composite origin, based on both European species of *Scyliorhinus (S. canicula, S. stellaris*). No type material was found in collections housing Linnaen materials (Eschmeyer, 1998: 318, 341; own research). In order to stabilize the present status of the names (in the sense of Quéro in Whitehead et alii, 1984: 99; Fricke, 1987: 42; synonymy by Compagno, 1984: 358), I hereby designate the following specimen as the neotype of *Squalus canicula* Linnaeus, 1758 and *Sqalus catulus* Linnaeus, 1758:
Neotype: SMNS 8663, male, 397.6 mm TL – Mediterranean Sea, Adriatic Sea, Croatia: 15 km NNW Cres City, Cres Island, 45°02'N 14°18' E – Fricke, R. – 2 May 1989.

Scyliorhinus stellaris (Linnaeus, 1758)

Squalus stellaris Linnaeus, 1758: 235 (in Mari Europaeo/European sea; neotype: SMNS 8673, as designated below).

LINNAEUS (1758: 235) described his *Squalus stellaris* as follows:
"S. varius inermis, pinnis ventralibus discretis, dorsalibus caudae approximatis.
... *Habitat in Mari* Europaeo."

He also noted that the description was based on several historical sources, including RONDELETIUS (1554: 383, fig., "De Canicula saxatili") and RAJUS (1713: 22, *Catulus maximus*) who inadequately described and illustrated a scyliorhinid with large sports which is most probably based on this species. The description by LINNAEUS (1758) is probably based on both European species of *Scyliorhinus (S. canicula, S. stellaris)*. No type material of *S. stellaris* could be detected in any collections housing Linnean materials (ESCHMEYER, 1998: 1606; own research). In order to stabilize the present status of the names (in the sense of COMPAGNO, 1984: 366; QUÉRO in WHITEHEAD et alii, 1984: 100; FRICKE, 1987: 42), I hereby designate the following specimen as the neotype of *Squalus stellaris* Linnaeus, 1758:
Neotype: SMNS 8673, female, 343.6 mm TL – Mediterranean Sea, Italy: Genova/Genoa, Liguria, 44°25'N 8°57'E – FRICKE, R. – 6 Oct. 1979.

Carcharhinidae

Galeorhinus galeus (Linnaeus, 1758)

Squalus Galeus Linnaeus, 1758: 234 (in oceano Europaeo/European sea; neotype: SMNS 20661, as designated below).

LINNAEUS (1758: 234) described his *Squalus galeus* as follows:
"S. naribus ori vicinis, foraminibus ad oculus.
... *Habitat in Oceano* Europae."

In addition, he refered to earlier descriptions by RONDELETIUS (1554), GESNER (1563), SALVIANI (1554), WILLUGHBY (1686), RAJUS (1713), and ARTEDI in LINNAEUS (1738) as sources. This is a composite description. RONDELETIUS (1554: 377–378, fig., "De Galeo cane") and RAJUS (1713: 23) inadequately described and illustrated a shark which could possibly be based on this species. From the description by LINNAEUS (1758) and many of the earlier authors, however, it is not possible to judge about the specific identity of the fish. No type material was found in collections housing Linnean specimens (ESCHMEYER, 1998: 628; own research). In order to stabilize the present usage of the name (in the sense of BRANSTETTER in WHITEHEAD et alii, 1984: 118; COMPAGNO, 1984: 386; FRICKE, 1987: 44), I hereby designate the following specimen as the neotype of *Squalus galeus* Linnaeus, 1758:
Neotype: SMNS 20661, 388.1 mm TL – Germany: Helgoland Island, 54°12'N 7°53'E – Museum Hamburg – 1846.

Mustelus mustelus (Linnaeus, 1758)

Squalus Mustelus Linnaeus, 1758: 235 (Europa/European sea; neotype: SMNS 20662, as designated below; name placed on Official List of Species Names in Zoology as type species of *Mustelus* Linck, 1790).

LINNAEUS (1758: 235) described his *Squalus mustelus* as follows:
"S. dentibus obtusis. ... *Habitat in* Europa."

In addition, he refers to earlier publications by GESNER (1563), SALVIANI (1554), WILLUGHBY (1686), RAJUS (1713) and ARTEDI in LINNAEUS (1738) as sources of his

description, which is clearly of a composite nature. The description as it stands is incomplete; it is impossible to judge about the specific identity. No type material was found in collections housing Linnean specimens (ESCHMEYER, 1998: 1140; own research). In order to stabilize the present usage of the name (in the sense of BRANSTETTER in WHITEHEAD et alii, 1984: 120; COMPAGNO, 1984: 419; FRICKE, 1987: 44–45), I hereby designate the following specimen as the neotype of *Squalus mustelus* Linnaeus, 1758:

Neotype: SMNS 20662, male, 376.2 mm TL – Mediterannean Sea, Adriatic Sea, Italy: Venezia/Venice, 45°27'N 12°21'E – MARTENS, VON – 1818.

Rajidae

Raja clavata (Linnaeus, 1758)

Raja clavata Linnaeus, 1758: 232 (in oceano Europaeo/European seas; neotype: SMNS 16042, as designated below).

LINNAEUS (1758: 232) described his *Raja clavata* as follows:
"R. aculeata, dentibus tuberculosis, cartilagine transversa ventrali. ... *Habitat in Oceano* Europaeo."

He also refers to the publications of RONDELETIUS (1554), GESNER (1563), WILLUGHBY (1686), RAJUS (1713), LINNAEUS and ARTEDI in LINNAEUS (1738) as sources for his description. The species is sketchily diagnozed and of a composite nature, probably based on several species of rajids. RONDELETIUS (1554: 353–354, fig., "De Raia Clauata") inadequately described and figured a rajid which could possibly have been based on this species. No type material was found in collections housing Linnean or pre-Linnean specimens (ESCHMEYER, 1998: 386; own research). In order to stabilize the present usage of the name (in the sense of STEHMANN in HUREAU & MONOD, 1973: 59; STEHMANN & BÜRKEL in WHITEHEAD et alii, 1984: 185–186; FRICKE, 1987: 50), I hereby designate the following specimen as the neotype of *Raja clavata* Linnaeus, 1758:

Neotype: SMNS 16042, 254.7 mm disc width, 359.9 mm TL – Germany: Helgoland Island, 54°12'N 7°53' E – Museum Hamburg – 1847.

Torpedinidae

Torpedo marmorata (Risso, 1810)

Torpedo Marmorata Risso, 1810: 20–21, pl. 3, fig. 4 (Nice/France; lectotype: RISSO, 1810, pl. 3, fig. 4, as designated below).

RISSO (1810: 20–21) described his *Torpedo marmorata* as follows:
"*T. Testacea, rubro luteoque varia; maculis fuscis, pinnâ caudae rotundâ. ...*"

The colour pattern illustrated by RISSO (1810: pl. 3, fig. 4) is characteristic for the species; the spiracle is well illustrated showing the typical shape of *Torpedo marmorata.* Therefore, I hereby designate RISSO's (1810: pl. 3, fig. 4) illustration as the **lectotype** of *Torpedo marmorata* Risso, 1810.

Dasyatidae

Dasyatis pastinaca (Linnaeus, 1758)

Raja Pastinaca Linnaeus, 1758: 232 (Europa/Europe; neotype: SMNS 12651, as designated below).

Linnaeus (1758: 232) described his *Raja pastinaca* as follows:
"R. corpore glabro, aculeo longo anterius serrato in cauda apterygia. ... *Habitat in* Europa. *Caudae aculeus venenatus veteribus & recentioribus. Fato Ulyssis clarus.*"

He also refered to publications from Rondeletius (1554) to Rajus (1713), and Artedi in Linnaeus (1738) as sources of his description. Rondeletius (1554: 331–337, fig., "De Pastinaca") described a dasyatid species which is a historical source for the description of Linnaeus (1758); it is, however, not identifyable to the species level. The species is inadequately diagnozed, and clearly of a composite nature, probably consisting of several species of dasyatids. No types were found in collections housing Linnean materials (Eschmeyer, 1998: 1297; own research). In order to stabilize the present usage of the name (in the sense of Krefft & Stehmann in Hureau & Monod, 1973: 70; McEachran & Capapé in Whitehead et alii, 1984: 199; Fricke, 1987: 55), I hereby designate the following specimen as the neotype of *Raja pastinaca* Linnaeus, 1758:
Neotype: SMNS 12651, 167.7 mm disc width, 316.8 mm TL – Italy: Napoli/Naples, 40°51'N 14°17'E – Zoological Station Naples – 1880.

Chimaeridae

Chimaera monstrosa (Linnaeus, 1758)

Chimaera monstrosa Linnaeus, 1758: 236 (Atlantic; neotype: SMNS 543, as designated below; name on the Official List of Species Names in Zoology, as the type species of *Chimaera* Linnaeus, 1758).

Linnaeus (1758: 236) described his *Chimaera monstrosa* as follows:
"C. rostro subtus plicis pertusis. ... *Habitat in mari* Atlantico."

In addition, he refered to the publications by Willughby (1686) and Rajus (1713) as sources of his description. The species is inadequately diagnozed, and clearly of a composite nature, as it cannot be identified to the species level. No types were found in collections housing Linnean materials (Eschmeyer, 1998: 1117; own research). In order to stabilize the present usage of the name (in the sense of Stehmann & Bürkel in Whitehead et alii, 1984: 213; Fricke, 1987: 56), I hereby designate the following specimen as the neotype of *Chimaera monstrosa* Linnaeus, 1758:
Neotype: SMNS 543, 859.5+ mm TL – Mediterranean Sea, France: Nice, 43°42'N 7°15'E – Museum Milano – Apr. 1856.

Anguillidae

Anguilla anguilla (Linnaeus, 1758)

Muraena Angvilla Linnaeus, 1758: 245 (Europa/Europe; neotype: SMNS 17418, as designated below; name *Muraena anguilla* Linnaeus, 1758 on the Official List of Species Names in Zoology, as type species of *Anguilla* Schrank, 1798).
Anguilla vulgaris Shaw, 1803: 15 (locality not stated; neotype: SMNS 17418, as designated below).

LINNAEUS (1758: 245) described his *Muraena angvilla* as follows:
"M. maxilla inferiore longiore, corpore unicolore. D.1000. P.19. V.0. A.100. C.–
... Habitat in Europa; maxima in lacu Cornachio Ferrariensi; non fert Danubium.
Nocturna; latet in coeno duplici foramine; coërcetur trunco albo Betulae; cutis tenacissima; parit vivipara, sub canicula.
Act. Holm. 1750. p. 194."

The species was clearly identified by LINNAEUS (1758). However, important characters are missing in the description. It was noted to be based on historical sources (e.g. LINNAEUS, 1746: 109, *Muraena unicolor, maxilla longiore* ..., who refered to historical literature from RONDELETIUS (1555) to RAJUS (1713); RONDELETIUS, 1555: 198–202, figs, "De Angullis"; GESNER, 1563: CLXXVIII, fig., as *Anguilla*). No type material could be detected in collections housing Linnean specimens (ESCHMEYER, 1998: 101). In order to stabilize the common usage of the name (in the sense of BRUNKEN & FRICKE, 1985: 34; BAUCHOT in WHITEHEAD et alii, 1986: 535–536), I hereby designate the following specimen as the neotype of both *Muraena anguilla* Linnaeus, 1758 and *Anguilla vulgaris* Shaw, 1803:

Neotype: SMNS 17418, 546.0 mm SL, 560.4 mm TL – Germany, Baden-Württemberg: Kinzig, at Neumühl, 2 km SE Kehl, 48°34'N 7°51'E – SIESSEGGER, J. – 22 July 1996.

Congridae

Conger conger (Linnaeus, 1758)

Muraena Conger Linnaeus, 1758: 245 (in oceano Europaeo/European seas; neotype: SMNS 20573, as designated below; name on the Official List of Species Names in Zoology, as type species of *Conger* Oken, 1817).

LINNAEUS (1758: 245) described his *Muraena conger* as follows:
"M. rostro tentaculis duobus linea laterali ex punctis albida.
Art. gen. 24. *syn.* 40. Muraena supremo margine pinnae dorsalis nigro.
Habitat in Oceano Europaeo."

This brief description refers to a congrid, but it is not possible to identify it down to the species level, as it might either refer to *Conger conger* or *Ariosoma balearicum.* The reference to ARTEDI in LINNAEUS (1738) is based on several historical sources (e.g. RONDELETIUS, 1554: 394–397, fig., "De Congro"; GESNER, 1563: XLVII–XLVIII, fig.; inaccurately described and figured). Since it was not possible to find a type in any of the institutions with Linnean materials (ESCHMEYER, 1998: 405; own research), I hereby designate the following specimen as the neotype of *Muraena conger* Linnaeus, 1758 in order to stabilize the present usage of the name (in the sense of FRICKE, 1987: 58–59):

Neotype: SMNS 20573, 435.3 mm TL – Italy, Venezia/Venice, 45°27'N 12°21'E – MARTENS, VON – 1818.

Clupeidae

Sardina pilchardus pilchardus (Walbaum, 1792)

Clupea harengus. Varietas. *Clupea Pilchardus* Walbaum, 1792: 38 (Cornwall, England; neotype: SMNS 20570, as designated below; name on the Official List of Specific Names in Zoology as type species of *Sardina* Antipa, 1940).

WALBAUM (1792: 38) described his "*Clupea harengus.* Var. *Clupea pilchardus*" as follows:
"Clupea *Pilchardus*, corpore minus compresso pinna dorsali aequilibri; Squamis non deciduis. W(albaum). ..."

WALBAUM also refered to earlier authors including RONDELETIUS (1554: 217–219, fig.) and GESNER (1563: II–III, fig.) who described and illustrated this species as *Sardina.* WALBAUM's description is of a composite origin and may have been based on several clupeid species. No type material was found (ESCHMEYER, 1998: 1339; own research). In order to stabilize the present usage of the name (in the sense of WHITEHEAD in WHITEHEAD et alii, 1984: 276–277; FRICKE, 1987: 61), I hereby designate the following specimen as the neotype of *Clupea pilchardus* Walbaum, 1792:
Neotype: SMNS 20570, 160.2 mm SL, 188.5 mm TL – Spain, Vigo, 42°14'N 8°43'E – FRICKE, R. – 13 May 1978.

Engraulidae

Engraulis encrasicolus (Linnaeus, 1758)

Clupea encrasicolus Linnaeus, 1758: 318 (in oceano Europaeo/European ocean; neotype: SMNS 20562, as designated below).

LINNAEUS (1758: 318) described his *Clupea encrasicolus* as follows:
"C(lupea) maxilla superiore longiore.
Art. gen. 7 syn. 17. Clupea maxilla superiore longiore.
Habitat in Oceano Europaeo. (...)"

This description refers to a herring-like fish with a long upper jaw. The only species like that in the northeastern Atlantic is what we now call *Engraulis encrasicholus* (in the sense of WHITEHEAD in WHITEHEAD et alii, 1984: 282–283, *E. encrasicholus;* FRICKE, 1987: 63, *E. enchrasicolus*). However, the description lacks many important characters distinguishing *E. encrasicholus* from other species of family Engraulidae. There are several historical sources of the description (e.g. RONDELETIUS, 1554: 211–212, fig., "De Encrasicholis"). As ist was not possible to detect any types in collections containing Linnean specimens (ESCHMEYER, 1998: 530; own research), I hereby designate the following specimen as the neotype of *Clupea encrasicolus* Linnaeus, 1758:
Neotype: SMNS 20562, 140.9 mm SL, 162.7 mm TL – Italy: Bay of Palermo, at Palermo, Sicilia, 38°07'N 13°21'E – PAGENSTECHER, H. A. – 1877.

Sternoptychidae

Maurolicus muelleri (Gmelin, 1789)

Salmo Mülleri Gmelin, 1789: 1378 (Sondmör/Norway; types not known).

The taxonomic identity of this species will be discussed in a forthcoming paper by FRICKE & WOLFRAM (in litt.).

Cyprinidae

Abramis ballerus (Linnaeus, 1758)

Cyprinus Ballerus Linnaeus, 1758: 326 (in Europae lacubus/European lakes; neotype: SMNS 15536, as designated below).

Cyprinus Farenus Linnaeus, 1758: 326 (in Sveciae laco Maelero/Lake Mälar, Sweden; neotype: SMNS 15536, as designated below).

LINNAEUS (1758: 326) described his *Cyprinus ballerus* as follows:
"C. pinna ani radiis 40. *Fn. svec.* 323.
Art. gen. 3. *syn.* 12. *spec.* 23. Cyprinus admodum latus & tenuis, pinna ani ossiculorum 40. D.11. P.16. V.10. A.40. C. 19.
Habitat in Europae lacubus."

He described his *Cyprinus farenus* as follows:
"C. pinna ani radiis 37, iride clava. *Art. spec.* 23. *Fn. sv.* 327. D.11. P.18. V.10. A.37. C.19.
Habitat in Sveciae Lacu Maelero."

Both *Cyprinus ballerus* and *C. farenus* of LINNAEUS (1758) are characterized in the original descriptions by their 37–40 (36–39 in acutal specimens) soft anal fin rays. However, many other important characters are missing. There were several historical sources for the descriptions (e.g. RONDELETIUS, 1555: 154–156, fig., "De Ballero", A Lugdunensibus/Lyon; based on *Abramis brama;* GESNER, 1563: CLXVIII, left page, fig., as *Blicca, Ballerus, Plestya;* LINNAEUS, 1746: 122–123, *Cyprinus pinna ani ossiculorum quadraginta* ..., citing historical literature form RONDELETIUS, 1555 to RAJUS, 1713), which were based on several different species including *Abramis brama.* No type material of either species could be detected in collections housing Linnean type material (ESCHMEYER, 1998: 190, 561; own research). In order to stabilize the present usage as a valid species named *Abramis ballerus* (Linnaeus, 1758), with *Cyprinus farenus* Linnaeus, 1758 as a synonym, in the sense of BERG (1949: 785), BRUNKEN & FRICKE (1985: 48) and KOTTELAT (1997: 108), I hereby designate the following specimen as the neotype of both *Cyprinus ballerus* Linnaeus, 1758 and *Cyprinus farenus* Linnaeus, 1758:

Neotype: SMNS 15536, 308.8 mm SL, 387.6 mm TL – Germany: Elbe River, near Wittenberge, Mecklenburg-Vorpommern, 53°00'N 11°44'E – BRUNKEN, H. – 1 Nov. 1992.

Abramis bjoerkna (Linnaeus, 1758)

Cyprinus Bjoerkna Linnaeus, 1758: 326 (in Sveciae lacubus/Lakes of Sweden; neotype: SMNS 12668, as designated below).

LINNAEUS (1758: 326) described his *Cyprinus bjoerkna* as follows:
"C. pinna ani radiis 35. *Fn. svec.* 328. D.11. P.15. V.9. A.35. C.19.
Art. gen. 3. *syn.* 13. *spec.* 20. Cyprinus quincuncialis, pinna ani ossiculorum 25. D.11. P. 15. V.9. A.25. C.19.
Habitat in Sveciae lacubus."

This is a composite description, based on historical sources including LINNAEUS (1746: 124, *Cyprinus pinna ani radiis viginti quinque* ..., refering to historical literature from RONDELETIUS, 1555 to RAJUS, 1713); it was probably based on several cyprinid species. No type material could be detected (ESCHMEYER, 1998: 237; own research). In order to stabilize the present usage of the name (in the sense of BRUNKEN & FRICKE, 1985: 46, as *Blicca bjoerkna;* KOTTELAT, 1997: 42), I hereby designate the following specimen (from a Baltic Sea tributary) as the neotype of *Cyprinus bjoerkna* Linnaeus, 1758:

Neotype: SMNS 12668, 190.6 mm SL, 237.1 mm TL – Germany: Greifswald, Mecklenburg-Vorpommern, 54°05'N 13°23'E – Zoologisches Institut Heidelberg – 1887.

Alburnus alburnus alburnus (Linnaeus, 1758)

Cyprinus Alburnus Linnaeus, 1758: 325 (in Europae aquis dulcibus/Europe; neotype: SMNS 15204, as designated below).

Linnaeus (1758: 325) described his *Cyprinus alburnus* as follows:
"C. pinna ani radiis 20. *Fn. svec.* 330.
Art. gen. 6. *syn.* 10. *spec.* 17. Cyprinus quincuncialis, pinna ani ossiculorum 20. D.10. P.14. V.9. A.21. C. –
Gron. mus. 1. *n.* 10. idem D.9. P. – V.9. A.22. C. –
Act. Ups. 1741. *p.* 75. *n.* 58. Koning van afterling. D.8. P.14. V.8. A. 18. C.20.
Habitat in Europae aquis dulcibus."

This is a composite description based on specimens and several literature sources, as cited by Artedi in Linnaeus (1738) (e.g. Rondeletius, 1555, 203–204, fig., "De Cobite fluuiatili"; 208, fig., "De Alburno"; Gesner, 1563: CLIX–CLX, fig., as *Alburnus Ausonii,* inadequately figured and described; Linnaeus, 1746: 124, *Cyprinus pinna ani radiis viginti* ..., refering to historical literature from Rondeletius, 1555 to Rajus, 1713), and Gronovius (1754a: 3, *Cyprinus quincuncialis, pinna ani occisulorum viginti*). Linnaeus's (1758) description was probably based on several species of cyprinids. Though the species is relatively well characterized, there are a number of errors in the description (20–22 anal fin rays; really 3/17–20; 8–10 dorsal fin rays, really 3/8; 14 pectoral fin rays, really 1/15). No type material was detected in collections housing Linnean specimens (Eschmeyer, 1998: 69; own research). In order to stabilize the present usage of the name (in the sense of Brunken & Fricke, 1985: 46), I hereby designate the following specimen as the neotype of *Cyprinus alburnus* Linnaeus, 1758:

Neotype: SMNS 15204, 160.3 mm SL, 195.4 mm TL – Germany: Rems Stream, at Winterbach, Baden-Württemberg, 48°49'N 9°58'E – Stephan, G. & Wnuck, H. – 7 June 1994.

Aspius aspius aspius (Linnaeus, 1758)

Cyprinus Aspius Linnaeus, 1758: 325 (in Sveciae lacubus/Swedish lakes; neotype: SMNS 20637, as designated below).

Linnaeus (1758: 325) described his *Cyprinus aspius* as follows:
"C. pinna ani radiis 16, maxilla inferiore longiore incurva.
Fn. svec. 319.
Art. gen. 6. *syn.* 14. *spec.* 14. Cyprinus maxilla inferiore longiore cum apice elevato, pinna ani ossiculorum 15. D.11. P.18. V.10. A.16. C.19.
Habitat in Sveciae lacubus."

This species is relatively well characterized in the original description, though the description is of a composite origin, based on specimens and literature sources (e.g. Gesner, 1563: CLXX, fig., as *Capito fluuiatilis rapax;* inaccurately described and illustrated; Linnaeus, 1746: 121, *Cyprinus pinna ani ossiculorum quindecim* ..., refering to Artedi in Linnaeus [1738] as its source). No type material was detected in collections housing Linnean materials (Eschmeyer, 1998: 149; own research). In order to stabilize the present usage of the name (in the sense of Brunken & Fricke, 1985: 44), I hereby designate the following specimen as the neotype of *Cyprinus aspius* Linnaeus, 1758:

Neotype: SMNS 20637, 138.1 mm SL, 167.8 mm TL (caudal fin damaged) – Germany: Neuwarper See/Lake Neuwarp, isolated southern part of Stettiner Haff,

southern part of lake, close to border to Poland, at Rieth, 53°42'N 14°15'E – BRUNKEN, H. – 25 July 1998.

Carassius carassius (Linnaeus, 1758)

Cyprinus Carassius Linnaeus, 1758: 321 (in Europae stagnis/in European ponds; neotype: SMNS 12750, as designated below).

LINNAEUS (1758: 321) described his *Cyprinus carassius* as follows:
"C. pinna ani radiis 10, caudae integra, linea laterali recta. D.20. P.15. V.8. A.9. C.21.
Art. gen. 4. *syn.* 5. *spec.* 29. Cyprinus pinna dorsi ossiculis 20, linea laterali recta. D.20. P.15. V.9. A.10. C. –
Fn. svec. 322. idem.
Gron. mus. 1. *n.* 11. idem. D.20. P.11. V.9. A.10. C.23.
Act. Ups. 1741. *p.* 75. *n.* 55. Cyprinus Hamburger. D.20. P.14. V.9. A.9. C.22.
Habitat in Europae stagnis. (...)"

This original description does not clearly differentiate the species; it is of a composite origin, based on several historical sources (e.g. GESNER, 1563; CLXVII, fig., as *Charax;* LINNAEUS, 1746: 122, *Cyprinus pinna ani ossiculorum viginti* ..., refering to historical literature from GESNER, 1563 to RAJUS, 1713; GRONOVIUS, 1754a: 3, *Cyprinus quincuncialis, pinna dorsi occiculorum viginti, linea lateri recta*) and may have been based on both *Carassius carassius* and the wild form of *Carassius auratus.* No types could be detected in collections housing Linnean specimens (ESCHMEYER, 1998: 327; own research). In order to stabilize the present usage of the name (in the sense of BERG, 1949: 821; BRUNKEN & FRICKE, 1985: 49), I hereby designate the following specimen as the neotype of *Cyprinus carassius* Linnaeus, 1758:
Neotype: SMNS 12750, 213.1 mm SL, 258.3 mm TL – Germany: Neckar River, at Heidelberg, Baden-Württemberg, 49°25'N 13°23'E – BLOCHMANN – 1890.

Gobio gobio gobio (Linnaeus, 1758)

Cyprinus Gobio Linnaeus, 1758: 320–321 (in Anglia et adjacentibus/Britain and surrounding countries; neotype: SMNS 20595, as designated below).

LINNAEUS (1758: 320–321) described his *Cyprinus gobio* as follows:
"C. pinna ani radiis 11, cirris 2. D.10. P.16. V.9. A.11. C.19.
Art. gen. 4. *syn.* 11. *spec.* 13. Cyprinus quincuncialis maculosus, maxilla superiore longiore, cirris duobus ad os. D.12. P.17. V.11. A.11. C.19.
Gron. mus. 2. *n.* 149. idem? D.8. P.14. V.6. A.7. C. –
Habitat in Anglia et adjacentibus."

The species is relatively well characterized in the original description. However, a number of important characters are missing in the original description (e.g. lateral line scales; relative length of barbels; colouration). Also, this is a composite description based on several historical sources (e.g. RONDELETIUS, 1555: 206–207, fig., "De Gobione fluuiatili", probably from Lyon/France; GESNER, 1563: CLX, left page, figs, *Gobio fluuiatilis;* inadequately described and figured, not identifyable; GRONOVIUS (1754b: 3, *Cyprinus quincuncialis, maculosus, maxilla superiore longiore* ...). No type material could be detected in collections housing Linnean materials (ESCHMEYER, 1998: 655; own research). In order to stabilize the present usage of the name (in the sense of BRUNKEN & FRICKE, 1985: 45), I hereby designate the following specimen (originating from a Rhone tributary in southern France which is close to the

type locality of the RONDELETIUS specimen) as the neotype of *Cyprinus gobio* Linnaeus, 1758:

Neotype: SMNS 20595, 76.3 mm SL, 91.0 mm TL – France, Département Gard: brook into Gardon de Saint-Jean River, ca 70 m above mouth, near Massies, between Saint-Jean-du-Gard and Audouze, 45 km NW Nîmes, 44°04'40"N 3°55'20"E – MARTENS, A. – 16 July 1995.

Leuciscus idus idus (Linnaeus, 1758)

Cyprinus Idus Linnaeus, 1758: 324 (in Europae aquis dulcibus/European freshwaters; neotype: SMNS 17362, as designated below).
Cyprinus Idbarus Linnaeus, 1758: 324 (in Sveciae lacubus/Swedish lakes; neotype: SMNS 16427, as designated below).
Cyprinus Orfus Linnaeus, 1758: 324 (in Rheno, Angliae fluviis, lacubus/Rhine; English rivers and lakes; neotype: SMNS 17362, as designated below).
Cyprinus Jeses Linnaeus, 1758: 325 (in Germania/Germany; neotype: SMNS 17362, as designated below).

LINNAEUS (1758: 324) described his *Cyprinus idus* as follows:
"C. pinna ani radiis 13 rubra. *Fn. svec.* 320. D.10. P.18. V.10. A.13. C.19.
Art. gen. 5. *syn.* 14. *spec.* 6. Cyprinus iride sublutea, pinnis ventralibus anique rubris. D.11. P. – V.10. A.13. C.19.
Gron. mus. 1. *p.* 3. *n.* 13. idem. D.10. P.20. V.9. A.13. C.24.
Habitat in Europae aquis dulcibus."

He described his *Cyprinus orfus* as follows:
"C. pinna ani radiis 13.
Art. syn. 6. Cyprinus Orfus dictus.
Raj. pisc. 118. Rutilus latior s. Rubellio fluviatilis. D.10. P.19. V.9. A.13. C. –
Meyer. thier. 2. *t.* 94. Orf.
Habitat in Rheno, Angliae fluviis, lacubus."

LINNAEUS (1758) described his *Cyprinus jeses* as follows:
"C. pinna ani radiis 14, rostro rotundato. D.– P.– V.– A.– C.–
Art. syn. 7. Cyprinus cubitalis, pinna ani ossiculorum 14.
Habitat in Germania."

This species is relatively well characterized in each of the four original descriptions cited above, though they are of composite origins, based on specimens and literature sources (e.g. GESNER, 1563: CLXVII, figs, as *Orfus;* RAJUS, 1713: 118; GRONOVIUS (1754a: 3, *Cyprinus iride sublutea, pinnis ventralibus, anique rubis*), which can be identified as several cyprinid species, including *Rutilus rutilus, Leuciscus idus, Scardinius erythrophthalmus.* A number of important characters are missing in the original descriptions (e.g. lateral line scales; scales above the lateral line; colouration), and some are in error (dorsal rays 10–11 in *C. idus, orfus* and *jeses;* really 3/8–9; anal rays 13 in *C. idus* and *orfus,* really 3/9–10; pectoral rays 19 in *C. orfus,* really 1/15–16). No type material of either nominal species was detected in collections housing Linnean materials (ESCHMEYER, 1998: 759, *C. idus;* 812, *C. jeses;* 1247, *C. orfus;* own research). In order to stabilize the present usage of the name *Cyprinus idus* (in the sense of BRUNKEN & FRICKE, 1985: 42), and in order to permanently synonymize the names *C. jeses* and *C. orfus,* I hereby designate the following specimen as the neotype of *Cyprinus idus* Linnaeus, 1758, *Cyprinus orfus* Linnaeus, 1758 and *Cyprinus jeses* Linnaeus, 1758:

Neotype: SMNS 17362, 254.7 mm SL, 306.0 mm TL – Germany: Vorbach, 10 km

SSE Weikersheim, Baden-Württemberg, 49°25'N 9°47'E – HABERBOSCH, R. & DUSSLING, U. – 18 Apr. 1996.

LINNAEUS (1758: 324) described his *Cyprinus idbarus* as follows:
"C. pinna ani radiis 12, pinnis ventralibus sanguineis. D.10. P. – V.– A.12. C. 19.
Habitat in Sveciae lacubus."

Cyprinus idbarus Linnaeus, 1758 is considered as a synonym of *Leuciscus idus idus* (Linnaeus, 1758) (e.g. BRUNKEN & FRICKE, 1985: 42; KOTTELAT, 1997: 67). As the original description is very limited, omitting many important characters, and as no type specimen could be found in institutions housing Linnean materials (see ESCHMEYER, 1998: 759; own research), I hereby designate the following specimen of *L. idus idus* from a Baltic Sea drainage as the neotype of *Cyprinus idbarus* Linnaeus, 1758:

Neotype: SMNS 16427, 266.7 mm SL, 328.8 mm TL – Germany: Kiel/Schleswig-Holstein, 54°20'N 10°08'E – ZIETZ – 1883.

Phoxinus phoxinus phoxinus (Linnaeus, 1758)

Cyprinus Phoxinus Linnaeus, 1758: 322–323 (Europa/Europe; neotype: SMNS 20596, as designated below).
Cyprinus Aphya Linnaeus, 1758: 323 (in Europae rivulis/European creeks; neotype: SMNS 20596, as designated below).

LINNAEUS (1758: 322–323) described his *Cyprinus phoxinus* as follows:
"C. pinna ani radiis 8, macula fusca ad caudam, corpore pellucido. D.8. P.16. V.8. A.8. C.19.
Art. syn. 12. Cyprinus tridactylus varius oblongus teretiusculus, pinna ani ossiculorum 8.
Habitat in Europa."

He described his *Cyprinus aphya* as follows:
"C. pinna ani radiis 9, iridibus rubris, corpore pellucido. *Fn. svec.* 331. D.10. P.12. V.7. A.9. C.19.
It. Wgot. 232. Cyprinus minimus. D.11. P.8. V.8. A.9. C.19.
Art. gen. 4. *syn.* 13. *spec.* 30. Cyprinus biuncialis, iridibus rubris, pinna ani ossiculorum 9. D. – P. – V.– A.9. C.–
Habitat in Europae rivulis."

These descriptions are relatively accurate, but missing a number of important characters, including lateral line scales, body shape, etc. However, the descriptions are of a composite origin, based on several historical sources, probably with different specific identities (e.g. RONDELETIUS, 1555: 204–205, upper fig., "De Phoxinis"; GESNER, 1563: CLIX, left page, figs, as *Phoxinus laeuis;* LINNAEUS, 1746: 125, *Cyprinus pinnae ani radiis novem ...,* refering to ARTEDI in LINNAEUS (1738) as historical source). No type material of either species was found in collections housing Linnean specimens (ESCHMEYER, 1998: 118, 1333; own research). In order to stabilize the present usage of the names (in the sense of BRUNKEN & FRICKE, 1985: 43; *Cyprinus aphya* as a synonym of *Phoxinus phoxinus,* see KOTTELAT, 1997: 73), I hereby designate the following specimen as the neotype of both *Cyprinus phoxinus* Linnaeus, 1758 and *Cyprinus aphya* Linnaeus, 1758:

Neotype: SMNS 20596, 74.3 mm SL, 88.5 mm TL (caudal fin damaged) – Baltic Sea, Sweden, Prov. Öland: Öland Island, Björnnabben, 1.5 km WSW northern tip of island (at Erik Lighthouse), 5 km NNE Byxelkrok, 45 km NNW Borgholm, 57°21'58"N 17°04'13"E, 0–1 m depth, between boulders of little jetty – FRICKE, R. –18 Aug. 1998.

Scardinius erythrophthalmus (Linnaeus, 1758)

Cyprinus Erythrophthalmus Linnaeus, 1758: 324–325 (in Europa septentrionali/northern Europe: neotype: SMNS 20597, as designated below).

Linnaeus (1758: 324–325) described his *Cyprinus erythrophthalmus* as follows:
"C. pinna ani radiis 14, pinnis rubris. *Fn. svec.* 324.
Art. gen. 3. *syn.* 4. *spec.* 9. Cyprinus iride pinnis omnibus caudaque rubris. D.11. P16. V.10. A.14. C.19.
Habitat in Europa septentrionali."

This is a composite description; Linnaeus (1758) used for his description several earlier sources (Linnaeus, 1746: 123, *Cyprinus pinnae ani radiis quatuordecim* ..., refering to Willughby [1686] and Rajus, 1713). Descriptions in these historical papers confused *Scardinius erythrophthalmus, Rutilus rutilus, Leuciscus idus* and similar species. No type material was found in collections housing Linnean materials (Eschmeyer, 1998: 542; own research). For stabilizing the present usage of the name (Brunken & Fricke, 1985: 43), I hereby designate the following specimen as the neotype of *Cyprinus erythrophthalmus* Linnaeus, 1758:
Neotype, SMNS 20597, 250.1 mm SL, 300.1 mm TL – Germany: Elbe River, 15 km SE Wittenberge, Mecklenburg-Vorpommern, 52°51'N 11°50'E – Brunken, H. – July 1995.

Tinca tinca (Linnaeus, 1758)

Cyprinus Tinca Linnaeus, 1758: 321 (in Europae stagnis/European lakes; neotype: SMNS 10985, as designated below).

Linnaeus (1758: 321) described his *Cyprinus tinca* as follows:
"C. pinna ani radiis 25, caudae integra, corpore mucoso. D.10. P.16. V.9. A.25. C.24.
Art. gen. 4. *syn.* 5. *spec.* 27. Cyprinus mucosus totus nigrescens, extremitate caudae aequali. D.12. P.17. V.11. A.11. C.19.
Fn. svec. 321. Cyprinus pinna ani ossiculorum 11, cauda aequali.
Habitat in Europae stagnis, lacubus.
Carassios repurgat; Icteri magnes."

This description is accurate, but is missing several characters important for the identification of the species (e.g. lateral line scales, barbels, live colouration). It is based on historical sources (e.g. Rondeletius, 1555: 157–158, fig., "De Tinca"; Gesner, 1563: CLXVIII, fig., as *Tinca;* Linnaeus, 1746: 122, *Cyprinus pinnae ani ossiculis undecim* ..., refering to papers from Rondeletius, 1555 to Rajus, 1713). No type material could be detected in collections housing Linnean materials (Eschmeyer, 1998: 1680; own research). In order to stabilize the present usage of the name (in the sense of Brunken & Fricke, 1985: 44), I hereby designate the following specimen as the neotype of *Cyprinus tinca* Linnaeus, 1758:
Neotype: SMNS 10985, 209.6 mm SL, 262.7 mm TL – Germany: Schwippe Stream, 1.5 km above Böblingen-Dagersheim, Baden-Württemberg, 48°42'N 8°55'E – Fricke, R. & Wnuck, H. – 24 Sep. 1990.

Vimba vimba (Linnaeus, 1758)

Cyprinus Vimba Linnaeus, 1758: 325 (in Sveciae lacubus/lakes of Sweden; neotype: SMNS 14430, as designated below).

LINNAEUS (1758: 325) described his *Cyprinus vimba* as follows:
"C. pinna ani radiis 24, rostro nasiformi. *Fn. sv.* 326.
Art. gen. 6. *syn.* 14. *spec.* 18. Cyprinus rostro nasiformi, dorsi acuminato, pinna ani ossiculorum 24. D.11. P.16. V10. A.24. C.19.
Habitat in Sveciae lacubus."

This species was recognizably, but incompletely described. Several important characters are missing (lateral line scales, abscence of a horny keel on the lower jaw, colouration). The original description is of a composite nature, refering to LINNAEUS (1746: 123, *Cyprinus pinnae ani radiis viginti* ...), who cited ARTEDI in LINNAEUS (1738) as historical source. No type material was found in collections housing Linnean specimens (ESCHMEYER,1998: 1761; own research). In order to stabilize the present usage of the name (in the sense of BRUNKEN & FRICKE, 1985: 48–49), I hereby designate the following specimen as the neotype of *Cyprinus vimba* Linnaeus, 1758:

Neotype: SMNS 14430, 275.2 mm SL, 327.5 mm TL – Germany: Neckar River, old side bed at Neckarsulm, Baden-Würrtemberg, 49°12'N 9°13'E – VOLZ, G. – Oct. 1992.

Salmonidae

Coregonus albula (Linnaeus, 1758)

Salmo albula Linnaeus, 1758: 310 (Europa/Europe; neotype: SMNS 1255, as designated below).

LINNAEUS (1758: 310) described his *Salmo albula* as follows:
"S(almo) maxillis edentulis: inferiore longiore.
Art. gen. 9 syn. 13 spec. 40. Coregonus edentulus, maxilla inferiore longiore.
Fn. svec. 313. B.7. D.14. P.16. V.12. A.15. C.–
Habitat in Europa. Prurit ante Brumam."

This description is incomplete, lacking several characters which are important for the identification of the species (e.g. number and proportions of gill rakers, head shape, etc.). Also, it is of a composite nature based on several different historical sources (e.g. LINNAEUS, 1746: 119, *Coregonus edentulus, maxilla inferiore longiore* ..., who refered to publications from GESNER (1563) to RAJUS (1713) and ARTEDI in LINNAEUS (1738), possibly based on different species). No type material was found in collections housing Linnean materials (ESCHMEYER, 1998: 68; own research). In order to stabilize the present usage of the name (in the sense of THIENEMANN, 1922: 454; BERG, 1949; SVETOVIDOV in WHITEHEAD et alii, 1984: 374–375), I hereby designate the following specimen (which originates from the former Eastern Prussia, now Mazury in Poland, collected before the introduction of foreign coregonid stocks after 1885) as the neotype of *Salmo albula* Linnaeus, 1758:

Neotype: SMNS 1255, 190.6 mm SL, 228.4 mm TL – Poland: Spirdingsee/Sniardwy Lake, Mazury Province, 53°46'N 21°44'E – SIEBOLD, C. T. E. VON – Dec. 1864.

This species was formerly distributed in most lakes surrounding the Baltic Sea; today it is only found in the "Breiter Lucin" (Mecklenburg-Vorpommern, Germany).

Coregonus lavaretus balticus (Thienemann, 1922)

Coregonus lavaretus forma *baltica* Thienemann, 1922: 455 (Schlei R., Germany; neotype: SMNS 20628, as designated below).

Thienemann (1922: 455) diagnozed his *Coregonus lavaretus* forma *baltica* as follows:
"Die Schnauze zeigt alle Übergänge zwischen der kurzen und langnasigen Form. Die langnasigen Exemplare haben dorsal an der Nasenbasis eine schwache Einbuchtung, so daß die Nase etwas aufwärts gebogen ist. Die Nase selbst ist kürzer als bei der folgenden Form *(C. l.* var. *oxyrhynchus).* Relative Zahnlänge für Bogen II (9,8–14) 12,2. – In der Schlei. Schleischnäpel."

Thienemann (1922: 445–446) gave the total distribution range of this form as reaching from Flensburg to probably Greifswalder Bodden; also Christiansand (Kristinansand, Norway). No type material could be detected (Eschmeyer, 1998: 191; own research). This taxon is here considered to be a subspecies of *Coregonus lavaretus.* In order to stabilize the present usage of the name (in the sense of Fricke, Rechlin, Winkler, Bast & Hahlbeck, 1996), I hereby designate the following specimen as the neotype of *Coregonus lavaretus balticus* Thienemann, 1922:
Neotype: SMNS 20628, 93.1 mm SL, 110.7 mm TL – Germany: Oderhaff, at Mönkebude, Mecklenburg-Vorpommern, 53°46'N 13°57'E – Brunken, H. – 30 July 1998.

The neotype well agrees in number and relative length of gill rakers on the first arch, and head shape, with specimens described by Thienemann (1922: 445–455).

Salmo salar (Linnaeus, 1758)

Salmo salar Linnaeus, 1758: 308 (European seas and rivers; neotype: SMNS 19125, as designated below; name on the Official List of Species Names in Zoology as the type species of *Salmo* Linnaeus, 1758).

Linnaeus (1758: 308) described his *Salmo salar* as follows:
"S(almo) rostro ultra inferiorem maxillam prominente.
Art. gen. 11. syn. 22. spec. 48.
Fn. svec. 306. B12. D.15. P.14. V.10. A.13. C.19.
Habitat in Oceano Europae, parit in fluviis.
Mas maxilla superiore adunca; fortiter fluvios adscendit; allicitur albo."

This description is of a composite nature, based on several historical sources (Linnaeus, 1746: 115–116, *Salmo rostro infra inferiorem maxillam saepe prominente* ..., refering to sources from Rondeletius, 1554 to Rajus, 1713); it may have been based on specimens of both *Salmo salar* and *Salmo trutta.* No type material could be detected in collections housing Linnean materials (Eschmeyer, 1998: 1497; own research). For stabilizing the present usage of the name (in the sense of Svetovidov in Whitehead et alii, 1984: 381–382; Brunken & Fricke , 1985: 34), I hereby designate the following specimen as the neotype of *Salmo salar* Linnaeus, 1758:
Neotype: SMNS 19125, 282.9 mm SL, 329.7 mm TL – Germany: Ems River, at Ditzum, 10 km SE Emden, Niedersachsen, 53°18'N 7°16'E – Brunken, H. – Nov. 1996.

Salmo trutta (Linnaeus, 1758)

Salmo Trutta Linnaeus, 1758: 308 (European rivers; neotype: SMNS 20594, as designated below).

Salmo Eriox Linnaeus, 1758: 308 (in Oceano Europaeo, parit in fluviis/European seas and rivers; neotype: SMNS 20594, as designated below).

LINNAEUS (1758: 308) described his *Salmo trutta* as follows:
"S(almo) ocellis nigris iridibus brunneis, pinna pectoralis punctis 6.
Fn. svec. 308. B.– D.12. P.13. V.10. A.9. C.20.
Art. gen. 12 syn. 14. Salmo latus, maculis rubris nigrisque, cauda aequali.
Gron. mus. 2, n. 164. Salmo latus, cauda subrecta maxillis aequalibus, maculis nigris annulo albido. D.14. P.12. V.12. A.10. C.–
Habitat in fluviis Europae."

He described his *Salmo eriox* as follows:
"S. maculis cinereis, caudae extremo aequali. *Art. gen.* 12. *syn.* 23. *spec.* 50. *Fn. svec.* 307. B.12. D.14. P.14. V.10. A.12. C.–
Habitat cum praecedente *(Salmo salar).*"

These descriptions are of a composite nature, based on several historical sources (e.g. LINNAEUS, 1746: 116, *Salmo maculis nigris brunneo cinctis* ..., refering to sources from WILLUGHBY, 1686 to RAJUS, 1713 and ARTEDI in LINNAEUS, 1738) which may have been based on specimens of *Salmo salar* and *Salmo trutta.* No type material could be detected in collections housing Linnean materials (ESCHMEYER, 1998: 539; 1707; own research). For stabilizing the present usage of the name (in the sense of SVETOVIDOV in WHITEHEAD et alii, 1984: 382–383; BRUNKEN & FRICKE, 1985: 35, with *Salmo eriox* as a synonym of *S. trutta* according to KOTTELAT, 1997: 141), I hereby designate the following specimen as the neotype of both *Salmo trutta* Linnaeus, 1758 and *Salmo eriox* Linnaeus, 1758:

Neotype: SMNS 20594, 261.7 mm SL, 298.3 mm TL – Germany: Weser River, 8 km S Nordenham, at "Unterweser" Nuclear Power Station, Niedersachsen, 53°25'36"N 8°28'56"E, fish screen at cooling water intake – FRICKE, R. – 15 May 1998.

Osmeridae

Osmerus eperlanus schonfoldi (McAllister in Whitehead et alii, 1986)

Eperlanus schonfoldii Rutty, 1772: 358 (Dublin, Ireland; name not available as published in a work that is not consistently binominal; see ESCHMEYER, 1998: 1521).
Osmerus eperlanus schonfoldi McAllister in Whitehead et alii, 1986: 401, 402 (Poland westward to British Isles; neotype: SMNS 20598, as designated below).

RUTTY (1772: 358) described his *Eperlanus Schonfoldii* as follows:
"The Smelt.
It is frequent in *July* and *August*, the flesh soft, tender and of a delicate flavour."

This description does not contain any familiar, specific or subspecific characters, and is therefore inadequate to distinguish the species. The first available reference to the name is the description of MCALLISTER in WHITEHEAD et alii (1986: 401, 402). No type material of this taxon is known from any institutions (ESCHMEYER, 1998: 1521; own research). There may be confusion between the two subspecies. *O. eperlanus eperlanus* and *O. eperlanus schonfoldi,* as it is not possible to identify the subspecies in MCALLISTER's (in WHITEHEAD et alii, 1986: 401) illustration, and as no type material could be found (neither of RUTTY's nor of MCALLISTER's taxon), I hereby designate a neotype for *Osmerus eperlanus schonfoldi* McAllister in Whitehead et alii, 1986:

Neotype: SMNS 20598, 175.1 mm SL, 207.5 mm TL – Germany: Ems River, at Ditzum, 10 km SE Emden, Niedersachen, 53°18'N 7°16'E – Brunken, H. – June 1997.

Lophiidae

Lophius budegassa (Spinola, 1807)

Lophius budegassa Spinola, 1807: 376–377 (Golfe de Gênes/Gulf of Genoa, Italy; neotype: SMNS 2209, as designated below).

Spinola (1807: 376–377) briefly described his new species *Lophius budegassa* and distinguished it from *L. piscatorius* in having a triangular and distally compressed esca. However, important characters that distinguish the species are missing in the original description (peritoneum black; dorsal fin ray numbers; etc.). No type material could be detected (Eschmeyer, 1998: 293; own research). In order to stabilize the present usage of the name (in the sense of Caruso in Whitehead et alii, 1986: 1362–1363), I hereby designate the following specimen as the neotype of *Lophius budegassa* Spinola, 1807:

Neotype: SMNS 2209, 324.2 mm SL, 379.5 mm TL – Italy: Napoli/Naples, 40°51'N 14°17'E – Zoological Station Naples – Jan. 1877.

Gadidae

Enchelyopus cimbrius (Linné, 1766)

Gadus cimbrius Linné, 1766: 440 (O. Atlantico: Scanico; neotype: SMNS 2647, as designated below).

Linné (1776: 440) described his *Gadus cimbrius* as follows:
"cimbricus. 16. G. dipterygius cirratus, cirris 4, pinna dorsali priore exoleta: radio primo hastato. B.7. D.1,48. P.16. V.7. A.42. C.25.
Habitat in O. Atlantico: Scanico. D. *Strussenfelt.*"

This brief description is mainly accurate (except for the anal fin ray number: 37–41 in *E. cimbrius*), however missing a number of characters which are important to distinguish the species (length and position of first dorsal ray; position of barbels; colouration). No type material could be found in collections (Eschmeyer, 1998: 378; own research). In order to stabilize the present usage of the name (in the sense of Cohen in Cohen et alii, 1990: 38), I hereby designate the following specimen as the neotype of *Gadus cimbrius* Linné, 1766:

Neotype: SMNS 2647, 193.5 mm SL, 218.5 mm TL – Germany: Kiel, Schleswig-Holstein, Baltic Sea, 54°20'N 10°08'E – Zietz – Apr. 1879.

Gadus morhua Linnaeus, 1758

Gadus morhua Linnaeus, 1758: 252 (in oceano Europaeo/European seas; neotype: SMNS 20563, as designated below; name on the Official List of Species Names in Zoology as the type species of *Gadus* Linnaeus, 1758).
Gadus vertagus Walbaum, 1792: 143 (locality not stated; neotype: SMNS 20563, as designated below).
Gadus heteroglossus Walbaum, 1792: 144 (locality not stated; neotype: SMNS 20563, as designated below).

LINNAEUS (1758: 252) described his *Gadus morhua* as follows:
"G(adus) tripterygius cirratus, cauda subaequali, radio primo anali spinoso.
Fn. svec. 295. (...)
D.15,20,16. P.20. V.6. A.21,16. C.–
Habitat in Oceano Europaeo.
Ova quotannis 9344000 ponit. Leuwenh."

This description is of a composite nature, based on several historical sources (e.g. LINNAEUS, 1746: 111, *Gadus dorso tripterygio, ore cirrato* ..., refering to sources from RONDELETIUS, 1554 to RAJUS, 1713); the description is lacking several characters which are important for the identification of the species (position of the first dorsal fin relative to the beginning of the anal fin; distance between the dorsal fins; upper or lower jaw protruding?; lateral line shape) or subspecies. No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 1121; own research). In order to stabilize the present usage of the name *Gadus morhua morhua* (in the sense of SVETOVIDOV in WHITEHEAD et alii, 1986: 686–687; FRICKE, 1987: 71), I hereby designate the following specimen as the neotype of *Gadus morhua* Linnaeus, 1758:

Neotype, SMNS 20563, 261.1 mm SL, 291.9 mm TL – North Sea, Denmark: 180 km NW Esbjerg, 57°05'04"N 7°14'04"E – R/V "Friedrich Heincke" – 28 Mar. 1998.

Gadus heteroglossus and *G. vertagus* have been treated as synonyms of *Gadus morhua* (see SVETOVIDOV in HUREAU & MONOD, 1973: 303). They were inadequately described by WALBAUM (1792), and no localities were given. In order to stabilize the present usage, I hereby designate the specimen SMNS 20563 (see above) as the **neotype** of both *Gadus heteroglossus* Walbaum, 1792 and *Gadus vertagus* Walbaum, 1792, thus fixing their status as synonyms of *Gadus morhua morhua.*

Gadus morhua morhua is distributed on both sides of the North Atlantic, from Bay of Biscay to Greenland, Spitzbergen and Novaya Zemlya, while *G. m. callarias* Linnaeus, 1758 is found in the Baltic Sea east of the Kleiner and Grosser Belt.

Gaidropsaris vulgarus (Cloquet, 1824)

Mustela vulgaris Cloquet, 1824: 456–457 (Atlantic and Mediterranean Sea; lectotype: illustration by RAJUS, 1713: pl. 2, fig. 9, as designated below).

CLOQUET (1824: 456–457) described this species as follows:
"La Mustele commune: *Mustela vulgaris,* N.; *Gadus mustela,* Linn. Nageoire de la queue arrondie; deux barbillons à la mâchoire supérieure, un à l'inférieure; corps très-allongée, visqueux, gluant; ventre blanc; dos d'un brun fauve, à taches noirâtres ...
Ce poisson habite l'Océan atlantique et al Méditerranée. ..."

CLOQUET's (1824: 456) description is based in part on the description of RAJUS (1713: 164, pl. 2, fig. 9, *Mustela marina vulgaris,* Rockling, Cornwal/Cornwall, England), but there are earlier sources as well (e.g. RONDELETIUS, 1554: 281–282, fig., "De Mustella vulgari"). The illustration of RAJUS (1713) is quite characteristic for the species. I therefore hereby designate this illustration (RAJUS, 1713: pl. 2, fig. 9) as the **lectotype** of *Mustela vulgaris* Cloquet, 1824 (in the sense of SVETOVIDOV in WHITEHEAD et alii, 1986: 701; FRICKE, 1987: 77).

Molva molva (Linnaeus, 1758)

Gadus molva Linnaeus, 1758: 254–255 (in oceano Europaeo/European seas; neotype: SMNS 20391, as designated below).

Linnaeus (1758: 254–255) described his *Gadus molva* as follows:
"G(adus) dipterygius cirratus, maxilla superiore longiore.
Art. gen. 22, syn. 36. Gadus dorso dipterygio, ore cirrato, maxilla superiore longiore. D.15,65. P.15. V.6. A. 62. C. –
It. Wgot. 177. Gadus Longus. D.15,63. P.20. V.6. A.60. C.–
Habitat in Oceano Europaeo."

This description is sketchy, but mostly correct, except that the pectoral fin of *Molva molva* has 18–21 rays, not 15 as stated by Artedi in Linnaeus (1738). However, several characters which are important for the identification of the species are missing (number of chin barbels; body colouration; length of mouth cleft; length of pelvic fin; length of chin barbel; eye size). As it may be hard to distinguish the species using the description of Linnaeus, and since no type material could be detected in the collections housing Linnean materials (Eschmeyer, 1998: 1113; own research), I hereby designate the following specimen as the neotype of *Gadus molva* Linnaeus, 1758 in order to stabilize the present usage of the name (in the sense of Svetovidov in Whitehead et alii, 1986: 703; Fricke, 1987: 75):

Neotype: SMNS 20391, 244.9 mm SL, 262.7 mm TL – Norway: Kvitsand, northern Nordbotn Island, 70 km NW Trondheim, 63°40'50"N 9°05'E, 35–40 m depth – Retz, W. – 27 June 1998.

Pollachius pollachius (Linnaeus, 1758)

Gadus Pollachius Linnaeus, 1758: 254 (in Oceano Europaeo; neotype: SMNS 20392, as designated below).

Linnaeus (1758: 254) described his *Gadus pollachius* as follows:
"G. tripterygius imberbis, maxilla inferiore longiore, linea laterali curva.
Art. gen. 20. *syn.* 35. Gadus dorso tripterygio imberbi, maxilla inferiore longiore, linea laterali curva. D.11,19,16. P.17. V.6. A.16,18. C.–
Gron. mus. 1. *n.* 57. Idem. D.13,17,23. P.17. V.6. A.14,23. C.–
It. Wgot. 177. gadus Lyrblek s. Zaj. D.13,19,18. P.16. V.6. A.27,18. C.–
Habitat in Oceano Europaeo."

This description is sketchy, and of a composite nature. A few characters are incorrect (like the third dorsal fin containing 23 rays in the description of Gronovius, but 15–20 in *Pollachius pollachius;* first anal fin with 16 rays in Artedi in Linnaeus, 14 in Gronovius, but 23–34 in *P. pollachius;* second anal fin with 23 rays in Gronovius, but 16–21 in *P. pollachius*), and many characters which are important to distinguish the species are missing (position of first dorsal fin in relation to anal fin base; distance between dorsal fins; colouration). No type material was found in collections containing Linnean specimens (Eschmeyer, 1998: 1361; own research). In order to stabilize the present usage of the name (in the sense of Svetovidov in Whitehead et alii, 1986: 690–691; Fricke, 1987: 72–73), I hereby designate the following specimen as the neotype of *Gadus pollachius* Linnaeus, 1758:

Neotype: SMNS 20392, 226.4 mm SL, 258.6 mm TL – Norway: Kvitsand, northern Nordbotn Island, 70 km NW Trondheim, 63°40'50" 9°05'E, 35–45 m depth – Retz, W. – 27 June 1998.

Pollachius virens (Linnaeus, 1758)

Gadus virens Linnaeus, 1758: 253 (in Oceano Europaeo/European seas; syntype: BMNH 1853.11.12:167, 1 skin).
Gadus Carbonarius Linnaeus, 1758: 254 (in Oceano Europaeo/European seas; neotype: SMNS 21185, as designated below).

Linnaeus (1758: 254) described his *Gadus carbonarius* as follows:
"G. tripterygius imberbis, maxilla inferiore longiore, linea lateri recta.
Art. gen. 20. *syn.* 34. Gadus dorso tripterygio imberbi, maxilla inferiore longiore(,) linea laterali recta. D.14,20,22. P.18. V.6. A.22,19. C.–
Habitat in Oceano Europaeo."

The original description of *Gadus carbonarius* is sketchy. A few characters are incorrect (like pectoral fin rays 18 in the original description, but 19–21 in *Pollachius virens*), and several important characters to distinguish the species are missing (e.g. position of dorsal fin in relation to anal fin base; distance between dorsal fins; colouration). No type material could be detected in collections housing Linnean specimens (Eschmeyer, 1998: 327; own research). In order to stabilize the present usage of the name as a synonym of *Pollachius virens* (in the sense of Svetovidov in Hureau & Monod, 1973: 309; species as defined by Svetovidov in Whitehead et alii, 1986: 691; Fricke, 1987: 73), I hereby designate the following specimen as the neotype of *Gadus carbonarius* Linnaeus, 1758:
Neotype: SMNS 21185, 170.0 mm SL, 185.4 mm TL – Netherlands: Texel Island, 53°00'N 4°47'E – Janssen, C. – Sep. 1982.

Trisopterus esmarki (Nilsson, 1855)

Gadus esmarki Nilsson, 1855: 565 (Christianiafjord, Norway; neotype: SMNS 20397, as designated below).

Nilsson (1855: 565) briefly described his *Gadus esmarki;* the species, however, cannot be identified with certainty out of the original description. No type material could be detected in the ZMUC or other institutions (Eschmeyer, 1998: 545; own research). In order to stabilize the present usage of the name (in the sense of Svetovidov in Whitehead et alii, 1986: 693; Fricke, 1987: 74, *T. esmarkii*), I hereby designate the following specimen as the neotype of *Gadus esmarki* Nilsson, 1855:
Neotype: SMNS 20397, 175.5 mm SL, 193.7 mm TL – Norway: Kwitsand, northern Nordbotn Island, 70 km NW Trondheim, 63°40'50"N 9°05'E, 35–40 m depth – Retz, W. – 27 June 1998.

Trisopterus minutus (Linnaeus, 1758)

Gadus minutus Linnaeus, 1758: 253 (M. Mediterraneo/Mediterranean Sea; neotype: SMNS 9886, as designated below).

Linnaeus (1758: 253) described his *Gadus minutus* as follows:
"G(adus) tripterygius cirratus, ano in medio corporis.
Art. gen. 21. syn. 36. Gadus dorso tripterygio, ore cirrato, corpore sescunciali, ano in medio corporis. D.12,19,17. P.13. V.6. A.27,17. C.–
Habitat in M. Mediterraneo.
* Pinnis dorsalibus tribus, ore imberbi."

The description of *Gadus minutus* is sketchy. A few characters are wrong (like pectoral fin rays 13, but 17–19 in *Trisopterus minutus;* anus in the middle of the body

in the original description, but much closer to tip of snout than to caudal fin base in *T. minutus*), and several characters which are important to distinguish the species are missing (e.g. position of dorsal fin in relation to anal fin base; distance between dorsal fins; colouration). The type locality is the Mediterranean Sea as stated by LINNAEUS (1758: 253), not the Atlantic as mentioned by BAUCHOT in FISCHER, SCHNEIDER & BAUCHOT (1987: 1102) who erroneously restricts *Trisopterus minutus minutus* to the area between Gibraltar and Scandinavia. No type specimens could be detected in collections containing Linnean materials (ESCHMEYER, 1998: 1101; own research). In order to stabilize the present usage (as of SVETOVIDOV in HUREAU & MONOD, 1973: 310; SVETOVIDOV in WHITEHEAD et alii, 1986: 694–695; FRICKE, 1987: 73), I hereby designate the following specimen as the neotype of *Gadus minutus* Linnaeus, 1758:

Neotype: SMNS 9886, 134.8 mm SL, 152.3 mm TL – Greece: Varkisa, 36 km SE Piraievs, 37°43'12"N 23°44'32"E – TSIOMOS, V. – 21 Dec. 1989.

Merlucciidae

Merluccius merluccius (Linnaeus, 1758)

Gadus merluccius Linnaeus, 1758: 254 (in Oceano/in the ocean; neotype: SMNS 20575, as designated below).

LINNAEUS (1758: 254) described his *Gadus merluccius* as follows:
"G(adus) dipterygius cirratus, maxilla interiore longiore. D10,39. P.12. V.7. A.38. C.22.
Art. gen. 22. syn. 36. Gadus dorso dipterygio, maxilla inferiore longiore. D.9,40. P.12. V.7. A.39. C.–
Habitat in Oceano."

This description is sketchy, but correct; however, LINNAEUS did not mention several characters which are important for the identification of the species (e.g. presence or absence of a chin barbel; length of pectoral fin; colouration; proportions), especially in order to distinguish it from other merlucciid species, as LINNAEUS did not state the type locality. No type specimens could be detected in collections containing Linnean materials (ESCHMEYER, 1998: 1070; own research). In order to stabilize the present usage (in the sense of SVETOVIDOV in HUREAU & MONOD, 1973: 300; FRICKE, 1987: 78), I hereby designate the following specimen as the neotype of *Gadus merluccius* Linnaeus, 1758:

Neotype: SMNS 20575, 279.6 mm SL, 309.7 mm TL – Italy, Venezia/Venice, 45°27'N 12°21'E – MARTENS, VON – 1818.

Exocoetidae

Cheilopogon heterurus heterurus (Rafinesque-Schmaltz, 1810)

Exocoetus Heterurus Rafinesque-Schmaltz, 1810a: 58 (Sicily/Italy; neotype: SMNS 16404, as designated below).

RAFINESQUE-SCHMALTZ (1810a: 58) described his *Exocoetus heterurus* as follows:
"Ale pettorali giundendo quasi allo coda e con 10 raggi, l'ado minali situate più vicino della coda che del capo, ma non giungendo fino ad essa, lobo inferiore della coda più lungo, ala dorsale con 14 raggi, l'anale con 10 – ..."

This brief original description in incomplete and partly erroneous (dorsal rays in *C. heterurus* 10–13, anal rays 9, pectoral rays 15–18). No type material could be

found (ESCHMEYER, 1998: 727; own research). In order to stabilize the present usage of the name (in the sense of PARIN in WHITEHEAD et alii, 1986: 614), I hereby designate the following specimen as the neotype of *Exocoetus heterurus* Rafinesque-Schmaltz, 1810:

Neotype: SMNS 16404, 291.5 mm SL, 345.1+ mm TL – Lebanon: Beirut/Bayrut, 33°53'N 35°30'E – Universität Heidelberg – 1970.

Belonidae

Belone belone belone (Linnaeus, 1758)

Esox Belone Linnaeus, 1761: 126 (in oceano Europaeo/European seas; neotype: SMNS 20453, as designated below; name on the Official List of Species Names in Zoology as the type species of *Belone* Cuvier, 1816).

LINNAEUS (1761: 126) described his *Esox Belone* as follows:
Esox Belone rostro utraque maxilla subulato. Esox rostro cuspidato gracili subtereti spithamali. *Art. gen.* 14. *syn.* 27. *Fn.* 305.
Rond. pisc. 227. Acus prima species.
Salv. pisc. 68. Acus piscis.
Gesn. pisc. 9. Acus prima species.
Aldr. ichth. 106. Acus vulgaris s. oppiani.
Charl. onom. 136. Acus.
Schonef. ichth. 11. Acus prima species.
Will. ichth. Acus vulgaris s. oppiani.
Raj. pisc. 109. Acus vulgaris s. oppiani.
Suecis Nábbgjádda. *Bahusiensibus* Horngiáll.
Habitat in *mari Occidentali* frequens. ..."

The description of is based on earlier sources, including RONDELETIUS (1554: 227–229, fig., "De Acus prima specie"), GESNER (1563: XLVIII–XLIX, fig. as *Acus prima species),* and ALDROVANDUS (1613: 106–108, fig., "De Acv vvlgari sive Oppiani"), who inaccurately described and figured a fish which may belong to this species. No type material could be detected (ESCHMEYER, 1998: 211; own research). In order to stabilize the present usage of the name (in the sense of COLLETTE & PARIN in WHITEHEAD et alii, 1986: 605–606), I hereby designate the following specimen as the neotype of *Esox belone* Linnaeus, 1761:

Neotype: SMNS 20453, 564.3 mm SL, 626.2 mm TL – Germany: Ems River, at Ditzum, 10 km SE of Emden, Niedersachsen, 53°18'N 7°16'E – BRUNKEN, H. – June 1997.

Scomberesocidae

Scomberesox saurus (Walbaum, 1792)

Esox Saurus Walbaum, 1792: 93 (Cornwall and British seas; neotype: SMNS 464, as designated below).

WALBAUM (1792: 93) described his *Esox saurus* as follows:
"Esox, *Saurus,* rostro subalato, pinnulis spuriis versus caudam. *The Saury Pike. Pennant.* br. zool. III. 325.
(...) Habitat in mari Britannico.
Skipper Cornubiensium. *Raji syn.* p. 109 & 165."

This description is mainly based on RAJUS (1713: 109, 165), but there are other historical sources like RONDELETIUS (1554: 232, fig., "De Sauro") which were used by LINNAEUS, which well characterize the species, describing the shape of the body and the finlets on the caudal peducle, however inaccurately illustrating the species. No type material could be detected (ESCHMEYER, 1998: 1509; own research). In order to stabilize the present usage of the name (in the sense of PARIN in WHITEHEAD et alii, 1986: 611; FRICKE, 1987: 80), I hereby designate the following specimen as the neotype of *Esox saurus* Walbaum, 1792:

Neotype: SMNS 464, 311.0 mm SL, 336.5 mm TL – Italy: Messina, Sicilia/Sicily, 38°11'N 15°33'E – KÖLLIKER, Museum Würzburg – Jan. 1855.

Caproidae

Capros aper (Linnaeus, 1758)

Zeus aper Linnaeus, 1758: 267 (Rome and Genoa, Italy; neotype: SMNS 2204, as designated below).

LINNAEUS (1758: 267) described his *Zeus aper* as follows:
"Z(eus) cauda aequali, corpore rubente.
Art. gen. 50. *syn.* 78. Zeus cauda aequali totus rubens, rostro reflexo. D.9,23. P.14. V.1/5. A.3/26. C.–
Habitat Romae, Genuae."

This description is accurate, however missing several important characters to distinguish the species. The description is based on ARTEDI in LINNAEUS (1738), wo refers to historical sources. The species was inaccurately figured in RONDELETIUS (1554: 161) and GESNER (1563: XXXVI). In the Mediterranean, there is not much with which it could be confused. No type specimens could be detected in collections (ESCHMEYER, 1998: 117; own research). In order to stabilize the present usage of the name (in the sense of QUÉRO in WHITEHEAD et alii, 1986: 778–779; FRICKE, 1987: 82), I hereby designate the following specimen (originating from Naples, which is considered close enough to Rome and Genoa which were stated as type localities by LINNAEUS) as the neotype of *Zeus aper* Linnaeus, 1758:

Neotype: SMNS 2204, 52.3 mm EL, 64.8 mm TL – Italy: Napoli/Naples, 40°51'N 14°17'E – Zoological Station Naples – Jan. 1877.

Macrorhamphosidae

Macrohamphosus scolopax (Linnaeus, 1758)

Balistes scolopax Linnaeus, 1758: 329 (in Mari Mediterraneo/Mediterranean Sea; neotype: SMNS 12661, as designated below).

LINNAEUS (1758: 329) described his *Balistes scolopax* as follows:
"B(alistes) pinna dorsali anteriore quinque-radiata, rostro longissimo maxilla inferiore operculato.
Art. gen. 54. syn. 82. Balistes aculeis binis loco pinnarum ventralium, solitario infra anum. D.5,12. P.14. V. – A.18. C.–
Habitat in Mari Mediterraneo."

This description is mostly accurate, except for a few errors (e.g. pectoral fin rays 14, but 16–17 in *M. scolopax*), but is lacking several characters which are important

for the identification of the species. The description is based on earlier literature sources (e.g. RONDELETIUS, 1554: 422–423, fig., "De Scolopace"). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 1526; own research). In order to stabilize the present usage of the name (in the sense of ERICH in WHITEHEAD et alii, 1986: 627; FRICKE, 1987: 86), I hereby designate the following specimen as the neotype of *Balistes scolopax* Linnaeus, 1758:

Neotype: SMNS 12661, 86.9 mm SL, 97.0 mm TL – Italy, Liguria: Genova/Genoa, 44°25'N 8°57'E – PAGENSTECHER, H. A. – 1863.

Syngnathidae

Entelurus aequoreus (Linnaeus, 1758)

Syngnathus aequoreus Linnaeus, 1758: 337 (in pelago/open sea; neotype: SMNS 11563, as designated below).

LINNAEUS (1758: 337) described his *Syngnathus aequoreus* as follows:
"S(yngnathus) pinna caudae radiata, pectoralibus anique nullis, corpore angulato. D.30. P.0. V.0. A.0. C.5.
Habitat in Pelago."

This description is accurate, except for one error (dorsal fin rays 30, but 37–47 in *Entelurus aequoreus*), but is lacking several characters which are important to distinguish the species (e.g. number of body and caudal rings; shape and length of the snout; position of the dorsal fin in relation to the anus). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 45; own research). In order to stabilize the present usage of the name (in the sense of WHEELER in HUREAU & MONOD, 1973: 278; DAWSON in WHITEHEAD et alii, 1986: 629; FRICKE, 1987: 89), I hereby designate the following specimen as the neotype of *Syngnathus aequoreus* Linnaeus, 1758:

Neotype: SMNS 11563, 340 mm TL – France, Bretagne: Roscoff, 40 km NE Brest, 48°43'N 3°59'W – STRUBELT, T. – 3 Dec. 1990.

Nerophis ophidion (Linnaeus, 1758)

Syngnathus Ophidion Linnaeus, 1758: 337 (in Europa/Europe; syntype: BMNH 1853.11.12: 185, 1 skin).
Syngnathus barbarus Linnaeus, 1758: 337 (in Pelago/in the ocean; neotype: SMNS 20599, as designated below).

LINNAEUS (1758: 337) described his *Syngnathus barbarus* as follows:
"S. pinnis caudae anique nullis, corpore sexangulato. D.43. P.22. V.0. A.0. C.0.
Habitat in Pelago."

This species was barely diagnozed; however, the combination of 43 dorsal fin rays and lacking caudal fin refer to *Nerophis ophidion.* The only discrepancy is the presence of a pectoral fin with 22 rays, which is lacking in *N. ophidion.* No type material of *S. barbarus* was found (ESCHMEYER, 1998: 194). In order to stabilize the present usage of European syngnathid nomenclature, with *S. barbarus* as a synonym of *Nerophis ophidion,* I hereby designate the following specimen as the neotype of *Syngnathus barbarus* Linnaeus, 1758:

Neotype: SMNS 20599, 246.2 mm TL – Germany: Kiel/Schleswig-Holstein, 54°20'N 10°08'E – ZIETZ – Apr. 1879.

Triglidae

Trigloporus lastoviza (Bonnaterre, 1788)

Trigla lastoviza Bonnaterre, 1788: 147 (Marseilles, France; on Lastoviza of Brünnich, 1768; neotype: SMNS 729, as designated below).

Bonnaterre (1788: 147) briefly described his *Trigla lastoviza,* refering to Brünnich (1768: 99). The description, however, is not sufficient to distinguish the species. No type material of this species could be found (Eschmeyer, 1998: 871; own research). In order to stabilize the present usage of the name (in the sense of Hureau in Whitehead et alii, 1986: 1237–1238; Fricke, 1987: 92), I hereby designate the following specimen as the neotype of *Trigla lastoviza* Bonnaterre, 1788:

Neotype: SMNS 729, 118.5 mm SL, 136.6 mm TL – France: Nizza/Nice, Département des Alpes-Maritimes, 43°42'N 7°15'E – Elsaesser, von – Nov. 1859.

Cottidae

Cottus gobio (Linnaeus, 1758)

Cottus Gobio Linnaeus, 1758: 265 (in Europae fluviis/European rivers; neotype: SMNS 20600, as designated below; name on the Official List of Species Names in Zoology as the type species of *Cottus* Linnaeus, 1758).

Linnaeus (1758: 256) described his *Cottus gobio* as follows:
"C. laevis, capite spinis duabus. (...) Habitat in Europae fluviis. (...)"

This description is clearly of a composite origin; Linnaeus (1758) refered to Artedi in Linnaeus (1738), Linnaeus (1746) and Gronovius (1754a) whose descriptions were based on various historical sources (e.g. Rondeletius, 1555: 202–203, fig., "De Cotto"; Gesner, 1563: CLXII–CLXIII, fig., as *Cottus siue Gobio fluviatilis capitanus;* Linnaeus, 1746: 104, *Cottus alepidotus glaber ...,* refering to descriptions from Rondeletius, 1555 to Rajus, 1713); probably based on several subspecies or even species *(Cottus gobio, C. poecilopus).* It is impossible to restrict the original type locality. Linnaeus's description contains Swedish and European continental components; Artedi's in Linnaeus (1738) description was based on several pre-Linnean sources from all over Europe (France, Germany). No type material could be detected in collections containing Linnean specimens (Eschmeyer, 1998: 655; own research). In order to stabilize the present usage of the name (Brunken & Fricke, 1985: 56; Fedorov in Whitehead et alii, 1986: 1247–1248; Kottelat, 1997: 169), I hereby designate the following specimen from a tributary of River Rhine as the neotype of *Cottus gobio* Linnaeus, 1758, which comes close to some of the sources of the description of Linnaeus (1758):

Neotype: SMNS 20600, 105.3 mm SL, 124.2 mm TL – Germany: Eyach Stream, in Balingen, Baden-Württemberg, 48°16'N 8°51'E, 1.5 m depth – Wolfram, D. & Huhn, R. – 1 Aug. 1998.

Regalecidae

Regalecus glesne (Ascanius, 1772)

Regalecus glesne Ascanius, 1772: 5, p. 11 (Glesvaer, près de Bergen/Norway; lectotype: illustration by Ascanius, 1772, pl. 11, as designated below).

Ascanius (1772: 5, pl. 11) briefly described but excellently illustrated his "*Regalecus glesne*" (in colour). No type material could be detected (Eschmeyer, 1998: 653; own research). In order to stabilize the present usage of the name (in the sense of Palmer in Whitehead et alii, 1986: 727–728; Fricke, 1987: 97–98), I hereby designate the illustration by Ascanius (1772: pl. 11) as the **lectotype** of *Regalecus glesne* Ascanius, 1772.

Serranidae

Serranus cabrilla (Linnaeus, 1758)

Perca cabrilla Linnaeus, 1758: 294 (locality not stated; neotype: SMNS 15283, as designated below; name on the Official List of Species Names in Zoology as type species of *Serranus* Cuvier, 1816).

Linnaeus (1758: 294) described his *Perca cabrilla* as follows:
"P(erca) pinnis dorsalibus unitis, cauda bifida, fasciis longitudinalibus 4 sanguineis.
Mus. Ad. Fr. 2, p. ... D10/24. P.16. V.1/6. A.3/10. C.17.
b. *Mus. Ad. Fr.* 2, p... Perca lituris flavis violaceisque variegata. D.10/24. P.14. V.6. A.3/10. C.16.
Habitat ..."

This description considerably differs from the present usage of the name *Serranus cabrilla* (dorsal fin rays 24, but 13–15 in *S. cabrilla;* anal rays 10, but 7–8 in *S. cabrilla;* 4 longitudinal red stripes, but 2–3 blue stripes in *S. cabrilla*). Furthermore, several characters important to distinguish the species are missing (shape of operculum; number of spines on operculum; presence of spines on head; presence or absence of scales on head and lower jaw). No type material could be detected in collections containing Linnean specimens (Eschmeyer, 1998: 300; own research). In order to stabilize the present usage (e.g. Tortonese in Whitehead et alii, 1986: 790; Fricke, 1987: 99), I hereby designate the following specimen as the neotype of *Perca cabrilla* Linnaeus, 1758:
Neotype: SMNS 15283, 97.8 mm SL, 118.0 mm TL – France, Pyrenées Orientales: Banyuls-sur-Mer, 42°24'N 3°10'E – Grabert, M. – 17 June 1994.

Percidae

Stizostedion lucioperca (Linnaeus, 1758)

Perca Lucioperca Linnaeus, 1758: 289–290 (in Europae lacubus/European lakes; neotype: SMNS 20603, as designated below).

Linnaeus (1758) described his *Perca lucioperca* as follows:
"P. pinnis dorsalibus distinctis: secunda radiis 23. *Fn. svec.* 285.
Art. gen. 39. *syn.* 62. *spec.* 76. Perca pallide maculosa, duobus dentibus maxillaribus utrinque majoribus. D.14, 2/23. P.16. V.1/6. A.2/14. C.17.
Habitat in Europae lacubus."

This is a composite description, as Artedi's in Linnaeus (1738) description is a compilation of several earlier authors (e.g. Gesner, 1563: CLXXVII, fig., as *Lucio perca;* inadequately figured and described; Linnaeus, 1746: 106–107, *Perca pinnis dorsalibus distinctis: secunda radiis viginti tribus* ..., refering to sources from Gesner, 1563 to Rajus, 1713 and Artedi in Linnaeus, 1738). No type material was found in collections housing Linnean specimens (Eschmeyer, 1998: 947; own re-

search). In order to stabilize the present usage of the name (in the sense of BRUNKEN & FRICKE, 1985: 57), I hereby designate the following specimen as the neotype of *Perca lucioperca* Linnaeus, 1758:

Neotype: SMNS 20603, 233.8 mm SL, 276.4 mm TL – Germany, Mecklenburg-Vorpommern: Stettiner Haff, at Dargen, S side of Usedom Island, shore to 500 m south, 53°52'N 14°00'E – BRUNKEN, H. – 29 July 1998.

Sparidae

Boops boops (Linnaeus, 1758)

Sparus boops Linnaeus, 1758: 280 (Mediterranean Sea; neotype: SMNS 11188, as designated below).

LINNAEUS (1758: 280) described his *Sparus boops* as follows:
"S(parus) lineis longitudinalibus obscuris; inferioribus quatuor aureis argenteisque.
Art. gen. 36. syn. 61. Sparus lineis utrinque 4 aureis ac argenteis longitudinalibus parallelis. D.30. P.– V.– A.19. C.–
Habitat in M. infero."

This description is incomplete and not sufficient to identify the species (not stating the number of spines and rays in the dorsal and anal fins; shape of body and head; shape of teeth; etc.). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 251; own research). In order to stabilize the present usage of the name (in the sense of TORTONESE in HUREAU & MONOD, 1973: 407; BAUCHOT & HUREAU in WHITEHEAD et alii, 1986: 884: FRICKE, 1987: 105), I hereby designate the following specimen as the neotype of *Sparus boops* Linnaeus, 1758:

Neotype: SMNS 11188, 152.5 mm SL, 181,8 mm TL – Greece, southern Peloponnes: Elafonissos Island, 36°29'N 22°58'E – KODAKOS, A. – 28 Aug. 1990.

Pagellus acarne (Risso, 1827)

Pagrus acarne Risso, 1827: 361 (Nice/France; neotype: SMNS 21186, as designated below).

RISSO (1827: 361) briefly, but incompletely, described his *Pagrus acarne.* No type material could be detected (ESCHMEYER, 1998: 31; own research). In order to stabilize the present usage of the name (in the sense of BAUCHOT & HUREAU in WHITEHEAD et alii, 1986: 898–899; FRICKE, 1987: 106), I hereby designate the following specimen as the neotype of *Pagrus acarne* Risso, 1827:

Neotype: SMNS 21186, 129.5 mm SL, 158.3 mm TL – Italy: Genova/Genoa, 44°25'N 8°57'E – FRICKE, R. – 8 Oct. 1979.

Pagellus erythrinus (Linnaeus, 1758)

Sparus erythrinus Linnaeus, 1758: 279 (Mediterranean Sea; America; neotype: SMNS 979, as designated below).

LINNAEUS (1758: 279) described his *Sparus erythrinus* as follows:
"S(parus) cauda subintegra, corpore rubro.
Mus. Ad. Fr. 2. p. ... D.12/22. P.16. V.6. A.7/13. C.18.
Loest. epist. msc. D11/24. P.17. V.6. A.3/12. C.17.
Art. gen. 36. syn. 59. Sparus totus rubens, iride argentea.
Habitat in M. Mediterraneo, Americano."

This description is incomplete, and containing a number of errors (dorsal fin spines 11 in Loest. epist., but 12 in *Pagellus erythrinus;* rays 22–24, but 10–11 in *P. erythrinus;* anal spines 7 in Mus. Ad. Fr., but 3 in *P. erythrinus;* anal rays 12–13, but 8–9 in *P. erythrinus*). It is of a composite origin, based on European and American material, while *P. erythrinus* is restricted to the northeastern Atlantic and Mediterranean. The historical sources include RONDELETIUS (1554: 144–146, fig., "De Erythrino"). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 541; own research). In order to stabilize the present usage of the name (in the sense of BAUCHOT & Hureau in WHITEHEAD et alii, 1986: 901; FRICKE, 1987: 105), I hereby designate the following specimen as the neotype of *Sparus erythrinus* Linnaeus, 1758:

Neotype: SMNS 979, 120.1 mm SL, 148.8 mm TL – Italy, Trieste/Triest, 45°40'N 13°46'E – KLUNZINGER, C. B. – Dec. 1862.

Spondyliosoma cantharus (Linnaeus, 1758)

Sparus cantharus Linnaeus, 1758: 280 (Mediterranean Sea; neotype: SMNS 20564, as designated below).

LINNAEUS (1758: 280) described his *Sparus cantharus* as follows:
"S(parus) cauda immaculata, corpore lineis longitudinalibus luteis.
Art. gen. 36. syn. 58. Sparus lineis utrinque luteis longitudinalibus parallelis, iride argentea.
Habitat in M. infero."

This description is incomplete and not useful to characterize the species, which may have been confused with *Boops boops* or *Sarpa salpa.* No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 320; own research). In order to stabilize the present usage (e.g. BAUCHOT & HUREAU in WHITEHEAD et alii, 1986: 907; FRICKE, 1987: 107), I hereby designate the following specimen as the neotype of *Sparus cantharus* Linnaeus, 1758:

Neotype: SMNS 20564, 87.7 mm SL, 108.5 mm TL – Greece: Varkisa, 36 km SE Piraiévs, 37°43'12"N 23°55'32"E – TSIOMOS, V. – 21 Dec. 1990.

Mullidae

Mullus surmuletus (Linnaeus, 1758)

Mullus surmuletus Linnaeus, 1758: 300 (Mediterranean Sea; Cornwall, England; neotype: SMNS 12479, as designated below).

LINNAEUS (1758: 300) described his *Mullus surmuletus* as follows:
"M(ullus) cirris geminis, lineis luteis longitudinalibus.
Art. gen. 43. *syn.* 71. Trigla capite glabro, lineis utrinque 4 luteis longitudinalibus.
Habitat in M. Mediterraneo et ad Cornubiam."

The description apparently refers to *M. surmuletus* (present usage, 4 yellow stripes), but is insufficient to characterize the species properly and distinguish it from *M. barbatus* or other mullid species, as it is missing many important characters. The description is based on historical sources (e.g. ALDROVANDUS, 1613: 123, fig., *Mullus maior* ex *Hispania missus*/Spain). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 1635; own research). In order to stabilize the present usage (e.g. HUREAU in HUREU & MONOD, 1973: 402;

Hureau in Whitehead et alii, 1986: 879; Fricke, 1987: 108), I hereby designate the following specimen as the neotype of *Mullus surmuletus* Linnaeus, 1758:

Neotype: SMNS 12479, 105.7 mm SL, 128.0 mm TL – Mediterranean Sea, Spain, Baleares Islands: 100 m south of Cap Alt, 300 m S of Punta Rossa/Punta Rasa, 6.5 km SSW San Francisco Javier, 38°41'28"N 1°23'E, 10–12 m depth – Fricke, R. – 5 Oct. 1991.

Mugilidae

Chelon labrosus (Risso, 1827)

Mugil labrosus Risso, 1827: 389 (Nice, France; neotype: SMNS 2208, as designated below).

Risso (1827: 389) briefly, and incompletely, described his *Mugil labrosus.* No type material could be detected (Eschmeyer, 1998: 856; own research). In order to stabilize the present usage of the name (in the sense of Ben-Tuvia in Whitehead et alii, 1986: 1198–1199; Fricke, 1987: 110), I hereby designate the following specimen as the neotype of *Mugil labrosus* Risso, 1827:

Neotype: SMNS 2208, 200.7 mm SL, 249.5 mm TL – Italy: Napoli/Naples, 40°51'N 14°17'E – Zoological Station Naples – Jan. 1877.

Liza aurata (Risso, 1810)

Mugil Auratus Risso, 1810: 344 (Nice, France; neotype; SMNS 20576, as designated below).

Risso (1810: 344) described his *Mugil auratus* as follows:

"2. M. Doré. N. *M. Auratus.* N. (Mugou daurin.)
M. Corpore caeruleo, fusco argenteoque variegato; operculis aureo guttatis. (...)"

The description also includes some colour notes, plus a few informations on fin ray counts. Important characters, like the presence or absence of adipose tissue covering the eye, the shape and width of the upper jaw, the presence and size of the axillary scale on the pectoral fin base, visibility of the end of the maxillary, number of predorsal scales, shape and number of pyloric caeca, position of the tip of the pectoral fin in relation to the dorsal fin origin, etc., are not described. The golden colouration of *Mugil Auratus* suggests that Risso meaned the same species that was called *Mugil auratus* by later authors. No type material was found (Eschmeyer, 1998: 167; own research). In order to stabilize the present usage of the name (in the sense of Ben-Tuvia in Whitehead et alii, 1986: 1199; Fricke, 1987: 110), I hereby designate the following specimen as the neotype of *Mugil auratus* Risso, 1810:

Neotype: SMNS 20576, 267.5 mm SL, 321.2 mm TL – Italy: Genova/Genoa, Liguria, 44°25'N 8°57'E – 1819.

Liza ramado (Risso, 1810)

Mugil Cephalus var. *ramado* Risso, 1810: 344 (Nice, France; neotype: SMNS 259, as designated below).

Risso (1810: 344) described his *Mugil cephalus* var. *ramado* as follows:

"A. Je place, comme une variété de cette espèce, un muge connu sous le nom de *ramado.* Il differe du précédent par son museau un peu plus aigu, par les opercules arrondis, par des taches noires dont la base des nageoires pectorales sont marquées, par le gout de sa chair qui est inférieure à celle du céphale, et par son poids qui approche à peine trois kilogrammes."

This original description does not properly characterize the species. The only indication of the specific identity if the weight of 3 kilogrammes, because *Liza ramado* is the second largest species (with 70 cm TL) following *Mugil cephalus* with 120 cm TL; other Mediterranean mullets, however, reach a maximum of 60 cm *(Chelon labrosus).* No type material could be detected (ESCHMEYER, 1998: 1423; own research). In order to stabilize the present usage of the name (in the sense of BEN-TUVIA in WHITEHEAD et alii, 1986: 1200–1201, as *L. ramada;* Fricke, 1987: 110, as *L. ramada*), the following specimen is designated as the neotype of *Mugil ramado* Risso, 1810:

Neotype: SMNS 259, 192.8 mm SL, 237.4 TL – Egypt: Nile River, at Cairo, 30°03'N 31°15'E – GRIESINGER – July 1852.

Labridae

Acantholabrus palloni (Risso, 1810)

Lutjanus palloni Risso, 1810: 263–264 (Nice, France; neotype: SMNS 11788, as designated below).

RISSO (1810: 263–264) described his *Lutjanus palloni* as follows:

"*L. corpore rosaceo immaculato; maxilla superiore dentibus majoribus; pinna ani spinis quinque.*

Plusieurs rapports de conformation semblent unir cette nouvelle espèce au *trimaculatus* et à l'*exoletus* de Linné, mais il en diffère par différents caractères. Son corps est oblong, aplati, d'un rose pâle, varié par quelques écailles dorées; la gorge et le ventre sont d'un blanc mat. Son museau est allongé, les lèvres peu épaisses; les mâchoires égales, garnies de dents crochues, dont les antérieures du dessus plus longues. La langue est libre et lisse, les yeux argentés, ornés par-dessus d'une lunule noire. La nuque est couverte de petits pores. Les opercules composés de deux pièces; la première, dentelée par de longues épines; la seconde, lisse et arrondie. La ligne latérale est jaune; courbe à son origine et vers la queue. La nageoire dorsale, d'un vert jaunâtre, variée d'obscur, contient vingt rayons aiguillonnés, écailleux à leur base, et huit articulés; l'anale blanche, cinq aigus, huit ramifiés; les thoracines roses, un épineus, cinq lisses; les pectorales jaunâtres, quatorze chaque; la caudale arrondie, quatorze; elle est marquée à la base de sa partie dorsale d'une grande tache noire; et la membrane branchiale a six rayons. La longueur de ce lutjan est de deux décimètres sur soixante-dix millimètres de largueur; je l'ai pris dans mois d'août dans le mer d'Eza."

The colouration is well characterized; the description, however, misses important characters distinguishing the genus and species (e.g. anal fin spine and ray counts, other fin ray counts, lateral line counts). No type material could be detected in collections (ESCHMEYER, 1998: 1274; own research). In order to stabilize the present usage of the name (in the sense of QUIGNARD & PRAS in WHITEHEAD et alii, 1986: 920–921; FRICKE, 1987: 112), I hereby designate the following specimen as the neotype of *Lutjanus palloni* Risso, 1810:

Neotype: SMNS 11788, 219.9 mm SL, 256.3 mm TL – Spain, Canary Islands: off Punta de El Cabrito, 6 km SW San Sebastian de la Gomera, Gomera Island, 28°02'05"N 17°10'07"W, 100–120 m depth – FRICKE, R. – 21 Jan. 1991.

Centrolabrus exoletus (Linnaeus, 1758)

Labrus exoletus Linnaeus, 1758: 287 (Atlantic Ocean; neotype: SMNS 3081, as designated below).

Linnaeus (1758: 287) described his *Labrus exoletus* as follows:
"L(abrus) pinna dorsi ramentacea, corpore lineis caeruleis, pinna ani spinis 5. D.19/25. P.13. V.1/6. A.5/13. C.13.
Habitat in Oceano Atlantico."

This description is erroneous in several respects (dorsal rays 25, but 5–7 in *Centrolabrus exoletus;* anal rays 13, but 6–8 in *C. exoletus*). No type material could be detected in collections containing Linnean specimens (Eschmeyer, 1998: 555; own research). In order to stabilize the present usage (e.g. Quignard & Pras in Whitehead et alii, 1986: 922–923; Fricke, 1987: 112), I hereby designate the following specimen as the neotype of *Labrus exoletus* Linnaeus, 1758:
Neotype: SMNS 3081, 116.0 mm SL, 140.0 mm TL – Norway: Christianiafjord/Oslofjord, near Oslo, 59°50'N 10°45'E – Schmeltz, Museum Godeffroy – Oct. 1881.

Labrus bergylta Ascanius, 1767

Labrus, Bergylta Ascanius, 1767: 3, pl. 1 (Lindersnes/Norway; lectotype: illustration by Ascanius, 1767, pl. 1, as designated below).

Ascanius (1767: 3, pl. 1) briefly described but excellently illustrated his "*Labrus, Bergylta*" (in colour). No type material could be detected (Eschmeyer, 1998: 215; own research). In order to stabilize the present usage of the name (in the sense of Quignard & Pras in Whitehead et alii, 1986: 926–927; Fricke, 1987: 106), I hereby designate the illustration by Ascanius (1767: pl. 1) as the **lectotype** of *Labrus bergylta* Ascanius, 1767.

Labrus bimaculatus (Linnaeus, 1758)

Labrus bimaculatus Linnaeus, 1758: 285 (in mari Mediterraneo/Mediterranean Sea).

Case 2905 (Fricke & Ferraris, 1996) is pending before the International Commission on Zoological Nomenclature to select neotypes so that *Labrus bimaculatus* Linnaeus, 1758 would be a labrid (SMNS 16250) and *L. punctatus* Linnaeus, 1758 would be a cichlid (CAS-SU 53337).

Trachinidae

Echiichthys vipera (Cuvier, 1829)

Trachinus vipera Cuvier, 1829: 152 (N. England; neotype: SMNS 12051, as designated below).

Cuvier (1829) described his *Trachinus vipera* as follows:
"Nous en avons une espèce plus petite, le *Boideroc* de la Manche *(Trachinus vipera,* Nob.); *Otterpike* des Anglais, Penn., 28, Bl., 61 (sous le nom *Vive commune*) plus pâle, à flancs lisses, à vingt-quatre rayons à la deuxième dorsale. Elle est encore plus redoutée que la commune, parce qu'étant plus petite, on est plus souvent exposé à en etre piqué."

Neither this description nor the reference to the description of Pennant is sufficient to distinguish the species. No type material could be detected (Eschmeyer, 1998: 1763; own research). In order to stabilize the present usage of the name (in the sense of Tortonese in Whitehead et alii, 1986: 951–952; Fricke, 1987: 114), I hereby designate the following specimen as the neotype of *Trachinus vipera* Cuvier, 1829:

Neotype: SMNS 12051, 66.4 mm SL, 79.9 mm TL – Great Britain: River Medway, at Kingsnorth Power Station, 10 km ENE Rochester, Kent, England, 51°25'30"N 0°36'30"E – FRICKE, R. – 4 May 1984.

The authorship of the original description is probably CUVIER & VALENCIENNES in CUVIER, indicated by the expression "nous" and "Nob.".

Blenniidae

Lipophrys pholis (Linnaeus, 1758)

Blennius pholis Linnaeus, 1758: 257 (Ocean/Atlantic Ocean; Mediterranean Sea; neotype: SMNS 13033, as designated below).

LINNAEUS (1758: 257) described his *Blennius pholis* as follows:
"B(lennius) capite laevi, linea laterali curva subbifida. D.12/28. P.14. V.2. A.19. C.10.
Art. gen. 27. syn. 44. (et Pholis) 116. Blennius capite, summo acuminato, maxilla superiore longiore. D.36. P.– V.2. A.28. C.–
Gron. mus. 2. n. 175. idem. B.6. D.12/32. P.13. V.2. A.19. C.10.
Habitat in Oceano et Mari Mediterraneo."

This is a composite description based on several sources. While ARTEDI's in LINNAEUS (1738) description is partly based on RAJUS (1713: 165, pl. 2, fig. 10, Cataphractus laevis Cornubiensis, Smooth Shan, Cornwall, England), which is most probably the same as the *Lipophrys pholis* of present usage, the Mediterranean records (e.g. RONDELETIUS, 1554: 206, fig., "De Pholide") are clearly based on the *Lipophrys trigloides* of present usage. No type material of *Blennius pholis* could be detected in institutions containing Linnean materials (ESCHMEYER, 1998: 1333; own research). As the present usage (ZANDER in WHITEHEAD et alii, 1986: 1104–1105; BATH, 1996: 91) is threatened by the composite nature of LINNAEUS's (1758) description, I hereby designate the following specimen as the neotype of *Blennius pholis* Linnaeus, 1758:

Neotype: SMNS 13033, 102.4 mm SL, 120.0 mm TL – Great Britain, Wales: Rhosneigr, Anglesey Island, 53°14'N 4°31'W – WIRTZ, P. – 5 Oct. 1972.

Stichaeidae

Chirolophis ascanii (Walbaum, 1792)

Blennius gattorugine. Var. *Blennius Ascanii* Walbaum, 1792: 173–174 (circa Norwegiam/around Norway; neotype: SMNS 3079, as designated below).

WALBAUM (1792: 173–174) described his *Blennius ascanii* as follows:
"Blennius, *Ascanii,* corniculis quatuor dentatis supra caput, & duobus in pinnae dorsalis initio. W(albaum).
Brosme toupée ou Galerite Ascanii icon. tab. 19. Br. 6. D.56/56. P.13. V.2. A.38. C.15.
(...) Capitur raro circa Norwegiam."

This species was well described by WALBAUM (1792); however, the characters given in the original description are not sufficient for species identification. No type material could be detected (ESCHMEYER, 1998: 144; own research). In order to stabilize the present usage of the name (in the sense of MAKUSHOK in WHITEHEAD et alii, 1986: 1122–1123; FRICKE, 1987: 116), I hereby designate the following specimen as the neotype of *Blennius ascanii* Walbaum, 1792:

Neotype: SMNS 3079, 120.2 mm SL, 136.3 mm TL (caudal fin separate) – Great Britain, England: Bristish coast – SCHMELTZ, Museum Godeffroy, Hamburg – Oct. 1881.

Lumpenus lumpretaeformis (Walbaum, 1792)

Blennius lumpretae-formis Walbaum, 1792: 184 (Iceland; types not known).

The taxonomic identity of this species will be discussed in a forthcoming paper by FRICKE & WOLFRAM (in litt.) on the marine fish fauna of Greenland.

Anarhichadidae

Anarhichas denticulatus (Krøyer, 1845)

Anarhichas denticulatus Krøyer, 1845: 140 (Greenland; types not known).

The taxonomic identity of this species will be discussed in a forthcoming paper by FRICKE & WOLFRAM (in litt.) on the marine fish fauna of Greenland.

Ammodytidae

Ammodytes marinus (Raitt, 1934)

Ammodytes marinus Raitt, 1934: 368–370 (Scotland; neotype: SMNS 15751, as designated below).

Ammodytes marinus was briefly distinguished from *A. tobianus* by RAITT (1934: 368–370) on the basis of fin ray and vertebrate numbers. No type material was found (ESCHMEYER, 1998: 1023; own research). In order to stabilize the present usage of the name (in the sense of REAY in WHITEHEAD et alii, 1986: 946–947; FRICKE, 1987: 120), I hereby designate the following specimen as the neotype of *Ammodytes marinus* Raitt, 1934:

Neotype: SMNS 15751, 101.1 mm SL, 111.7 mm TL – France: Morgat, Bretagne, 48°14'N 4°29'E – HALLERMANN, J. – 15 Nov. 1989.

Gymnammodytes semisquamatus (Jourdain, 1879)

Ammodytes semisquamatus Jourdain, 1879: 208–209, pl. 2, figs. 8, 13, 16, 18 (St Malo, France; lectotype: illustration by JOURDAIN, 1879, pl. 2, figs 8, 13, 16, 18, as designated below).

JOURDAIN (1879) thoroughly described his *Ammodytes semisquamatus,* which was mainly characterized by the structure of the lateral line with short additional branches. The types could not be found in the MNHN or other collections (ESCHMEYER, 1998: 1538; own research). In order to stabilize the present usage of the name (in the sense of REAY in WHITEHEAD et alii, 1986: 948–949; FRICKE, 1987: 120), I hereby designate the original illustration by JOURDAIN (1879: pl. 2, figs 8, 13, 16, 18) as the **lectotype** of *Ammodytes semisquamatus* Jourdain, 1879.

Callionymidae

Callionymus maculatus Rafinesque-Schmaltz, 1810

Callyonimus Maculatus Rafinesque-Schmaltz, 1810a: 25, pl. 5, fig. 1 (Sicily/Italy: neotype: SMNS 21188, as designated below).

RAFINESQUE-SCHMALTZ (1810a: 25) described his *Callyonimus maculatus* as follows:
"I raggi della prima ala dorsale molto più corti del corpo, l'apertura della bocca grande, una spina quadrifida sopra ogni operculo, due linee laterali e due ordini longitudinali di macchie bianche da ogni late del corpo, il quale é olivastro. – ..."

The illustration in RAFINESQUE-SCHMALTZ (1810a: pl. 5) seems to refer to the species we know today as *Callionymus maculatus;* however, there are a number of errors in the illustration, including five spines in the first dorsal fin, 11 second dorsal fin rays, and a very long upper jaw. The description is sketchy, and insufficient to distinguish the species. No type material could be found (ESCHMEYER, 1998: 990; own research). In order to stabilize the present usage of the species name (in the sense of FRICKE in WHITEHEAD et alii, 1986: 1089–1090; FRICKE, 1987: 124–125), I hereby designate the following specimen as the neotype of *Callyonimus maculatus* Rafinesque-Schmaltz, 1810:
Neotype: SMNS 21188, 60.8 mm SL, 74.6 mm TL – Italy: Santa Margherita Ligure, east of Genova/Genoa, 44°20'N 9°12'E – FRICKE, R. – 15 Oct. 1979.

Gobiidae

Crystallogobius linearis (Düben, 1845)

Gobius linaris Düben, 1845: 111 (Bergen, Norway; neotype: SMNS 9220, as designated below).

DÜBEN (1845: 111) briefly diagnozed his *Gobius linaris* as having 2 rays in the first and 20 in the second dorsal fin, etc. Though this is characteristic, the original description is missing a number of characters which are important to distinguish the species (other fin ray counts; head pores; scalation). No type material of this species was found (ESCHMEYER, 1998: 909; own research). In order to stabilize the present usage of the name (in the sense of MILLER in WHITEHEAD et alii, 1986: 1031; FRICKE, 1987: 129), I hereby designate the following specimen as the neotype of *Gobius linearis* Düben, 1845:
Neotype: SMNS 9220, 48.4 mm SL, 56.9 mm TL – Great Britain: Thames River, at West Thurrock Power Station, ca. 2 km E of Dartford Tunnel, north shore of Thames, Essex, England, 51°28'N 0°17'E, marine water at high tide in mouth of Thames – FRICKE, R. – 26 May 1989.

Gobiusculus flavescens (Fabricius, 1779)

Gobius flauescens Fabricius, 1779: 322 (Norway; neotype: SMNS 21189, as designated below).

FABRICIUS (1779: 322) briefly, but imcompletely, described this species:
"*Gobius flauescens* (means *flavescens*) flauescens macula caudali nigra, corpus paruum, caput obtusum oculis magnis approximatis coerulescentibus. Maxilla inferior obtusa longior. Corpus totum flauescens macula caudali vtrinque atra. Pinna D.7.12. V.10. P.21. A.11. C.14."

No type material could be detected (ESCHMEYER, 1998: 588; own research). In order to stabilize the present usage of the name (in the sense of MILLER in WHITEHEAD et alii, 1986: 1046–1047; FRICKE, 1987: 129), I hereby designate the following specimen as the neotype of *Gobius flavescens* Fabricius, 1779:

Neotype: SMNS 21189, 23.6 mm SL, 28.8 mm TL – Denmark: Gjerrild Bight, Sangstrup Cliff, 7 km N Grenå, 45 km N Århus, 56°28'53"N 10°53'59"E, 0.2–0.6 m depth, rocky (chalk) bottom, sand, algae, seagrass, at low tide – FRICKE, R. – 20 Aug. 1997.

Pomatoschistus minutus minutus (Gronovius in Pallas, 1770)

Gobius minutus Gronovius in Pallas, 1770: 4 (Belgian Sea; neotype: SMNS 21190, as designated below).

PALLAS (1770: 4) described his *Gobius minutus* as follows:
"...a *G. minuto* maris Belgici, quem GRONOVIUS (*Zoophyt. Fasc.* 1. *p.* 81) pro *Aphya* describit, ni fallor, diversissimus; ..."

Both this quotation, and the description by GRONOVIUS, are insufficient and may have been based on any of the four species of North Sea *Pomatoschistus (P. lozanoi, P. microps, P. minutus, P. norvegicus*). No type material could be detected (ESCHMEYER, 1998: 1101; own research). In order to stabilize the present usage of the name (in the sense of MILLER in WHITEHEAD et alii, 1986: 1074; FRICKE, 1987: 132), I hereby designate the following specimen as the neotype of *Gobius minutus* Gronovius in Pallas, 1770:

Neotype: SMNS 21190, 58.5 mm SL, 68.2 mm TL – Great Britain: River Medway, at Kingsnorth Power Station, 10 km ENE Rochester, England, 51°25'30"N 0°36'30'E – FRICKE, R. – 22 Feb. 1984.

Scombridae

Sarda sarda (Bloch, 1793)

Scomber sarda Bloch, 1793: 44–48, pl. 334 (Mediterranean Sea and Atlantic Ocean; lectotype: illustration by BLOCH, 1793, pl. 334, as designated below).

This species was well described and illustrated by BLOCH (1793). No type material could be detected (ESCHMEYER, 1998: 1507; own research). In order to stabilize the present usage of the name (in the sense of COLLETTE in WHITEHEAD et alii, 1986: 989–990; FRICKE, 1987: 137), I hereby designate the illustration in BLOCH (1793: pl. 334) as the **lectotype** of *Scomber sarda* Bloch, 1793.

Scomber colias (Gmelin, 1789)

Scomber Colias Gmelin, 1789: 1329 (Sardinia, Mediterranean Sea; neotype: SMNS 21191, as designated below).

GMELIN (1789: 1329) described his *Scomber colias* as follows:
"Sc. laete viridis et azureus. *Cetti pesc. e anf. di Sard. p.* 196.
Kolias. *Aristot. anim. hist.* V.9. VIII. 13. IX. 2.
Athenaeus Deipnos. III. 118. 120. VII. 321.
Colias. *Aldr. pisc.* p. 274. *Gesn. aq.* p. 256. *Will. ichth.* p. 182.
Lacertus. *Klein miss. pisc.* 5. *p.* 122.
Habitat ad Sardiniam, scombro similis, at minor; an junior pisces?"

This species was inadequately described and illustrated by RONDELETIUS (1554: 235–237, fig., "De Colia") and subsequent authors. The species is of a composite origin, probably based on both Mediterranean species of *Scomber*. No type material was found (ESCHMEYER, 1998: 394: own research). BRUCE COLLETTE (personal communication, 1997) is revising this group; he considers the possibility that the northeastern Atlantic form described as *Scomber colias* may be a valid species [otherwise named *Scomber japonicus* (non Houttuyn, 1782) by authors]. I therefore tentatively treat the name *Scomber colias* as a valid species name. In order to stabilize the present usage of the name of the northeastern Atlantic and Mediterranean form, I hereby designate the following specimen as the neotype of *Scomber colias* Gmelin, 1789:

Neotype: SMNS 21191, 189.2 mm SL, 203.7 mm TL – Spain, Canary Islands: Playa Blanca port, SE side of Lanzarote Island, inner (port) side of outer harbour jetty, 28°51'30"N 13°50'50"W, 0–2.5 m depth – FRICKE, R. – 15 May 1990.

Thunnus thynnus thynnus (Linnaeus, 1758)

Scomber thynnus Linnaeus, 1758: 297–298 (pelagic, between the tropics; neotype: SMNS 3251, as designated below; name on the Official List of Species Names in Zoology as the type of the genus *Thunnus* South, 1845).

LINNAEUS (1758: 297–298) described his *Scomber thynnus* as follows:
"S(comber) pinnulis utrinque VIII.
Osbeck iter. 69. Scomber albicans s. Albecor. D.14,12. P.32. V.6. A.13. C.30. (...)
Habitat in Tropicos, in Pelago.
Sociorum Garum pretiosa piscium Sanies ex intestinis piscium salitis."

This is a composite description which is based on several species of scombrids from all tropical oceans, and several historical sources (e.g. GESNER, 1563: LVIII–LIX, fig., as *Thinnus, Thunni imago Venetiis missa*). *Thunnus thynnus* (present usage, see below) is restricted to the Atlantic and North Pacific. No type specimens could be detected in collections containing Linnean material (ESCHMEYER, 1998: 1676; own research). In order to stabilize the present usage as *Thunnus thynnus thynnus* (e.g. POSTEL in HUREAU & MONOD, 1973: 467: COLLETTE in WHITEHEAD et alii, 1986: 997; FRICKE, 1987: 136–137), I hereby designate the following specimen as the neotype of *Scomber thynnus* Linnaeus, 1758:

Neotype: SMNS 3251, 212.2 mm SL, 239.0 mm TL – Italy: Napoli/Naples, 40°51'N 14°17'E – Zoological Station Naples – Dec. 1884.

Thunnus thynnus thynnus is the Atlantic subspecies, while *T. t. orientalis* is distributed in the North Pacific (according to COLLETTE in WHITEHEAD et alii, 1986: 997).

Xiphiidae

Xiphias gladius Linnaeus, 1758

Xiphias gladius Linnaeus, 1758: 248 (in oceano Europaeo/European seas; neotype: SMNS 2205, as designated below; name on the Official List of Species Names in Zoology as the type of the genus *Xiphias* Linnaeus, 1758).

LINNAEUS (1758: 248) described his *Xiphias gladius* as follows:
"Xiphias. Caput maxilla superiore terminatum rostro ensiformi; Os edentulum.
Xiphias.
Art. gen. 30. syn. 47. D.41. P.17. V.0, A. 15. C.–

Habitat in Oceano Europae.
Schelhameri Anatome Xiphii piscis."

This description refers to a young specimen of *Xiphias gladius.* It is mostly correct, but important characters are omitted (spines in dorsal and anal fins; caudal peduncle keel; shape of caudal fin; number of dorsal and anal spines and rays in adults; shape of dorsal fin; colouration). The species was inadequately described and illustrated by pre-Linnean authors (e.g. RONDELETIUS, 1554: 251–252, fig., "De Xiphia"; GESNER, 1563: LX–LXII, figs, as *Xiphias gladius*), which form the basis for ARTEDI in LINNAEUS (1731), and thus for LINNAEUS (1758). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 652; own research). In order to stabilize the present usage (e.g. NAKAMURA in WHITEHEAD et alii, 1986: 1006–1007; FRICKE, 1987: 138), I hereby designate the following specimen as the neotype of *Xiphias gladius* Linnaeus, 1758:
Neotype: SMNS 2205, 548.5 mm SL, 648.4 mm TL – Italy: Napoli/Naples, 40°51'N 14°17'E – Zoological Station Naples – Jan. 1877.

Pleuronectidae

Hippoglossoides platessoides limandoides (Bloch, 1787)

Pleuronectes limandoides Bloch, 1787: 24, pl. 186 (Hamburg, Germany; North Sea, Heiligeland/Helgoland; lectotype: BLOCH, 1787, pl. 186, as designated below).

This taxon was well described and illustrated by BLOCH (1787: 24, pl. 186). In order to stabilize the present usage of the name (as a subspecies of *Hippoglossoides platessoides,* in the sense of NIELSEN in WHITEHEAD et alii, 1986: 1300–1301), I hereby designate the illustration by BLOCH (1787: pl. 186) as the **lectotype** of *Pleuronectes limandoides* Bloch, 1787.

Limanda limanda (Linnaeus, 1758)

Pleuronectes limanda Linnaeus, 1758: 270 (in M. Europaeo/European seas; neotype: SMNS 20565, as designated below).

LINNAEUS (1758: 270) described his *Pleuronectes limanda* as follows:
"P(leuronectes) oculis dextris, squamis asperis, spina ad anum, dentibus obtusis.
Art. gen. 17. syn. 33. D.79. P.12. V.6. A.60. C.–
Habitat in M. Europaeo."

This description is accurate; however, it is missing characters important for the identification of the species (lateral line shape; shape of scales at dorsal and anal fin base; size of jaws; body shape; colouration). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 906; own research). In order to stabilize the present usage of the name (in the sense of NIELSEN in WHITEHEAD et alii, 1986: 1302–1303; FRICKE, 1987: 144), I hereby designate the following specimen as the neotype of *Pleuronectes limanda* Linnaeus, 1758:
Neotype: SMNS 20565, 213.2 mm SL, 248.6 mm TL – Denmark: 180 km NE Esbjerg, 57°05'04"N 7°14'04"E – R/V "Friedrich Heincke" – 28 Mar. 1998.

Microstomus kitt (Walbaum, 1792)

Pleuronectes Kitt Walbaum, 1792: 120 (British seas; neotype: SMNS 9646, as designated below).

WALBAUM (1792: 120) described his *Pleuronectes kitt* as follows:
"Pleuronectes, *Kitt* sive *Rhombus* laevis Cornubiensis, maculis nigris *Raji syn. piscium.* p. 162. tab. 1. fig. 1 (...)
The Smear-Dab. in *Br. zool.* III. 230. tab. 41. n. 106 (...)
Capitur in mari Britannico."

The description by WALBAUM (1792) is mainly based on RAJUS (1713: 162–163, pl. 1, fig. 1, *Rhombus laevis Cornubiensis maculis nigris.* A. Kitt; Cornwal/Cornwall, England). Unfortunately, the description and illustration are not clearly identifyable. The specimen illustrated has its eye on the left side of the body, while *Microstomus kitt* is always right-sided (*Scophthalmus rhombus* has the eyes on the left side, but has a wider body). Apparently, the original illustrations have been turned around before publication, as they show another species, the Whiff (fig. 2 of the same plate) right-sided, while it (*Lepidorhombus whiffiagonis*) should be left-sided. The lateral line is strongly bent above the pectoral fin, while it is only slightly bent in *M. kitt* (a strongly bent lateral line is found in *Limanda limanda*). The brown and orange blotches on the body, however, refer to *Microstomus kitt.* No type specimens have been found in collections containing Linnean or Gronovius materials (ESCHMEYER, 1998: 838; own research). In order to stabilize the present usage of the name (in the sense of NIELSEN in WHITEHEAD et alii, 1986: 1304; FRICKE, 1987: 144), I hereby designate the following specimen as the neotype of *Pleuronectes kitt* Walbaum, 1792:

Neotype: SMNS 9646, 130.0 mm SL, 158.2 mm TL – Netherlands, Texel Island, 53°00'N 4°57'E – JANSEN, C. – Sep. 1982.

Platichthys flesus flesus (Linnaeus, 1758)

Pleuronectes Flesus Linnaeus, 1758: 270 (in M. Europaeo/European seas: syntypes: BMNH 1853.11.12:132–134, 3 skins; NRM LP. 20, 1 specimen).
Pleuronectes Passer Linnaeus, 1758: 271 (in Oceano Europaeo/European seas; neotype: SMNS 20601, as designated below).

LINNAEUS (1758: 271) described his *Pleuronectes passer* as follows:
"P. oculis sinistris, linea lateralis sinistra aculeata.
Art. gen. 18. *syn.* 32. Pleuronectes oculis a sinistra, linea laterali aculeata. D.66. P.9. V.6. A.50. C.–
Habitat in Oceano Europaeo."

This description refers to a left-sided specimen of *Platichthys flesus.* It is based on historical sources (e.g. RONDELETIUS, 1554: 316–318, fig., "De Passere"; GESNER, 1563: LII–LIII, fig., as *Passer*). The description is mostly correct, except that the anal fin count is too high (36–46 in *P. flesus).* No type materials of *Pleuronectes passer* could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 1297; own research). In order to stabilize the present usage of the name as a synonym of *Platichthys flesus flesus* (in the sense of NIELSEN in WHITEHEAD et alii, 1986: 1304–1305; KOTTELAT, 1997: 182, synonymy), I hereby designate the following (left-sided as in the original description) specimen as the neotype of *Pleuronectes passer* Linnaeus, 1758:

Neotype: SMNS 20601, 199.9 mm SL, 237.5 mm TL – Germany: Ems River, at Ditzum, 10 km SE Emden, Niedersachsen, 53°18'N 7°16'E – Brunken, H. – Nov. 1996.

Bothidae

Arnoglossus laterna (Walbaum, 1792)

Pleuronectes Laterna Walbaum, 1792: 121 (locality not stated; neotype: SMNS 20572, as designated below).

Walbaum (1792: 121) described his *Pleuronectes laterna* as follows:
"Pleuronectes, *Laterna.*
Arnoglossus seu Solea laevis, *Rondeletii.*
Perpeire Gallis occitanis.
Lanerne vel *Smooth Sole Anglis. Pennant br. zool.* III. 132.
Corpus tenue, pellucidum & album. Squamae minutae mox caducae. Oculi dextri.
An idem Solea *Ovidii halieuticon* & Solea Philippensis argentea *Pettiveri garophyl.* tab. 26. fig. 10. rudis?"

This is a composite description, containing a number of errors (e.g. eyes right-sided; left-sided in *A. laterna*). Many characters important for the identification of the species are lacking. No type materials could be detected in collections containing Linnean specimens (Eschmeyer, 1998: 873; own research). In order to stabilize the present usage (Nielsen in Whitehead et alii, 1986: 1296; Fricke, 1987: 147), I hereby designate the following specimen as the neotype of *Pleuronectes laterna* Walbaum, 1792:

Neotype: SMNS 20572, 108.4 mm SL, 128.3 mm TL – Italy, Venezia/Venice, 45°27'N 12°21'E – Martens, von – 1818.

Scophthalmidae

Lepidorhombus boscii (Risso, 1810)

Pleuronectes boscii Risso, 1810: 319–321, p. 7, fig. 33 (Nice/France; neotype: SMNS 10056, as designated below).

This species was well described by Risso (1810: 319–321), and was also illustrated (Risso, 1810: pl. 7, fig. 33); the illustration is, however, erroneous, as it shows a bothid with 4 ocelli each in the dorsal and anal fins, while *L. boscii* (in the sense of Nielsen in Whitehead et alii, 1986: 1288; Fricke, 1987: 148) only has 2 dark blotches, one each distally on the dorsal and anal fins. No type material could be detected (Eschmeyer, 1998: 256, own research). In order to stabilize the present usage of the name (see above), I hereby designate the following specimen as the neotype *Pleuronectes boscii* Risso, 1810:

Neotype: SMNS 10056, 118.1 mm SL, 143.8 mm TL – Italy: Porto Santo Stefano, Toscana, 42°26'N 11°07'E – Koch, I. – 25 Mar. 1990.

Lepidorhombus whiffiagonis (Walbaum, 1792)

Pleuronectes Whiff-Iagonis Walbaum, 1792: 120 (British seas; lectotype: Rajus, 1713, pl. 1, fig. 2, as designated below).

Walbaum (1792: 120) described his *Pleuronectes whiff-iagonis* as follows:

"Pleuronectes, *Whiff-Iagonis,* sive Passer cornubiensis asper, magno oris hiatu *Raji syn. pisc.* p. 163. tab. 1, fig. 2. (...)
The *Wiff. Pennant br. zool.* III 236. (...) Habitat in mari brittanico."

This description is mainly based on the description and illustration by RAJUS (1713: 163, pl. 1, fig. 2, Passer Cornubiensis asper, magno oris hiatu. A. Whiff.; Cornwall/Cornwall, England). The illustration is characteristic, except that the specimen is right-sided (while *L. whiffiagonis* is always left-sided. Apparently, the clichés were turned to the wrong side before publication (see remarks on *Microstomus kitt*). Despite of this minor error, I hereby designate the illustration in RAJUS (1713: pl. 1, fig. 2; turned around to be left-sided) as the **lectotype** of *Pleuronectes whiff-iagonis* Walbaum, 1792. The type locality is Cornwall, southwestern England.

Soleidae

Monochirus luteus (Risso, 1810)

Pleuronectes luteus Risso, 1810: 312–313 (Nice/France; neotype: SMNS 20602, as designated below).

RISSO (1810: 312–313) described his *Pleuronectes luteus* as a soleid species with a golden ground colouration and a black pectoral fin. The species description could refer to 3 different species of Mediterranean soleids. No type material was found (ESCHMEYER, 1998: 956; own research). In order to stabilize the present usage of the name (in the sense of QUÉRO, DESOUTTER & LAGARDÈRE in WHITEHEAD et alii, 1986: 1311, as *Buglossidium luteum;* FRICKE, 1987: 150, as *Buglossidium luteum*), I hereby designate the following specimen as the neotype of *Pleuronectes luteus* Risso, 1810:
Neotype: SMNS 20602, 92.0 mm SL, 108.4 mm TL – Italy: Santa Margherita Ligure, Liguria, 44°20'N 9°12'E – FRICKE, R. –12 Oct. 1979.

Solea solea (Linnaeus, 1758)

Pleuronectes solea Linnaeus, 1758: 270 (in oceano Europaeo/European seas; neotype: SMNS 9660, as designated below).

LINNAEUS (1758: 270) described his *Pleuronectes solea* as follows:
"P(leuronectes) oculis dextris, corpore aspero oblongo, maxillia superiore longiore.
Art. gen. 18. syn. 32. spec. 60. Pleuronectes maxilla superiore longiore, corpore oblongo, squamis utrinque asperis. D.91. P. 9. V.5. A.74. C.14.
Fn svec. 299. idem.
It. Wgot. 178. Pleuronectes Tunga. D.71. P.8:7. V.5. A.40. C.40.
Habitat in M. Europaeo."

This description contains a couple of errors (e.g. dorsal fin rays 71 in It. Wgot., but 75–93 in *Solea solea;* 40 anal fin rays in It. Wgot., but 59–79 in *S. solea;* 40 caudal fin rays in It. Wgot., but 14–16 in *S. solea*). Important characters to identify the species are missing (e.g. colouration; number of lateral line scales; shape of body; size of pectoral fin on the blind side). The description by LINNAEUS (1758) is based on several historical sources (e.g. RONDELETIUS, 1554: 320–322, fig., "De Buglosso"; GESNER, 1563: LIII, fig., as *Solea siue Buglossus;* LINNAEUS, 1746: 112, *Pleuronectes oblongus, maxilla superiore longiore* ..., refering to sources from RONDELETIUS, 1554 to RAJUS, 1713 and ARTEDI in LINNAEUS, 1738). No type material could be detected in collections containing Linnean specimens (ESCHMEYER, 1998: 1578; own re-

search). In order to stabilize the present usage (FRICKE, 1987: 150, as *Solea vulgaris;* BEN-TUVIA, 1990: 948), I hereby designate the following specimen as the neotype of *Pleuronectes solea* Linnaeus, 1758:

Neotype: SMNS 9660, 217.6 mm SL, 248.3 mm TL – Netherlands: Texel Island, 53°00'N 4°57'E – JANSSEN, C. – Sep. 1982.

Balistidae

Balistes capriscus Gmelin, 1789

Balistes Capriscus Gmelin, 1789: 1471–1472 (Amerian, Indian and Mediterranean seas; neotype: SMNS 2663, as designated below).
Balistes Vetula b. *Balistes carolinensis* Gmelin, 1789: 1468 (in maris indici et americani/Indian and American seas; neotype: SMNS 2663, as designated below).

GMELIN (1789: 1471–1472) described his *Balistes capriscus* as follows:
"B. radio dorsali antrorsum serrato, ventrali humili solitario, cauda rotundata, rostro subobtuso. (...)
Habitat in mari americano, indico, mediterraneo, *coloribus multum ludens.*"

GMELIN also refered to several historical sources, including GRONOVIUS (1754), SEBA (1758), GESNER, ALDROVANDUS, JOHNSTONE, RONDELETIUS, WILLUGHBY (1686), RAJUS, ARTEDI in LINNAEUS, PLINIUS, SALVIANI, and RENARD. Thus, this description is of a composite origin. For example, RAJUS (1713: 47–48) alone refers to different sources of his description, based on species including *Balistes capriscus, Scorpaena porcus,* etc. No type material could be detected (ESCHMEYER, 1998: 326; own research). DAUDIN in CLOQUET (1816: 476–477), as the first reviser, selected *Balistes capricus* Gmelin, 1789 over *Balistes carolinensis* Gmelin, 1789. In order to stabilize the present usage of the name (in the sense of ROBINS & RAY, 1986: 302), I hereby designate the following specimen as the neotype of *Balistes capriscus* Gmelin, 1789:

Neotype: SMNS 2663, 184.4 mm SL, 227.8 mm TL – Mediterranean Sea, Italy: Napoli/Naples, 40°43'N 14°10'E – Zoologische Station Neapel – May 1879.

GMELIN (1789: 1468) described his *Balistes carolinensis* as follows:
"D.3,27. P.14. V.14. A.25. C.12.
Habitat in maris indici et americani profundis, testaceis victicans, satis magnus, bramae similis, supra ex fusco flavus, lineis caesiis varius, ad latera flavus, subtus cinereus, cute in areas parvas subrotundas partita, sum capitur, grunniens."

The remainder of GMELIN's (1789: 1468) description apparently refers to *Balistes vetula.* This is another composite description, consisting of several species of balistid fishes, since *B. capriscus* has an exclusive Atlantic Ocean distribution; it would not occur in the Indian Ocean. No type material could be detected (ESCHMEYER, 1998: 333; own research). In order to stabilize the present usage of the name as a synonym of *Balistes capriscus* (in the sense of MOORE, 1967: 691), I hereby designate the specimen SMNS 2663 (see above) as the neotype of *Balistes carolinensis* Gmelin, 1789.

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